

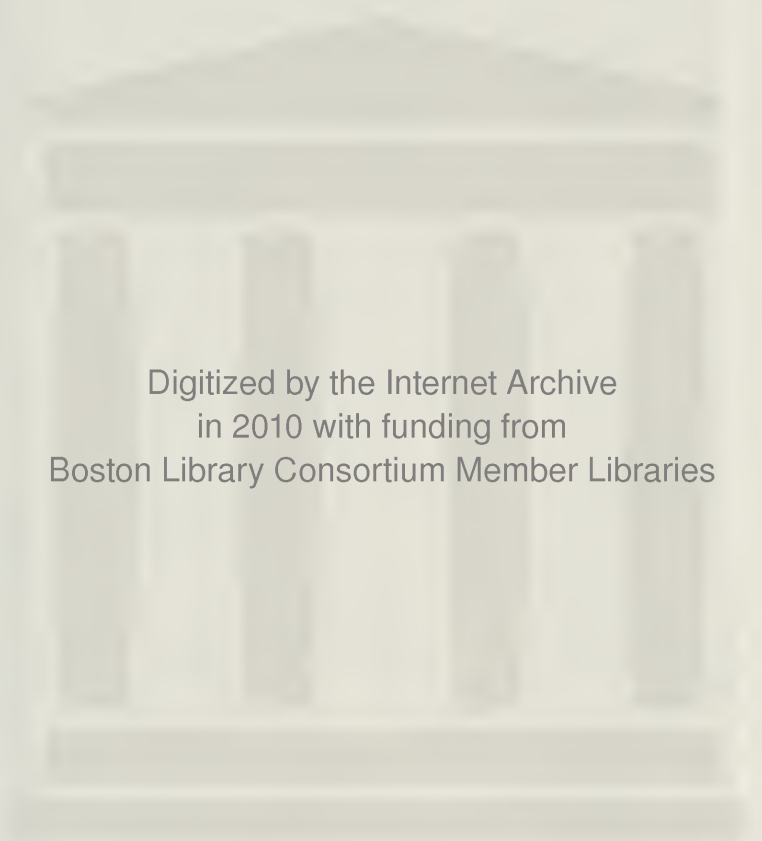
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MAP
OF THE
RAILROADS
OF THE STATE OF
MASSACHUSETTS

ACCOMPANYING THE REPORT OF THE
RAILROAD COMMISSIONERS.

1884.

EXPLANATION

Red Lines — Main Lines to 100 miles
Green Lines — Branch Lines to 50 miles
Blue Lines — Branch Lines to 25 miles
Populations of Cities and Towns, by Census of 1870, indicated
within their respective limits

Scale 1:100,000

SIXTEENTH ANNUAL REPORT

OF THE

BOARD OF RAILROAD COMMISSIONERS.

JANUARY, 1885.

BOSTON:

WRIGHT AND POTTER PRINTING CO., STATE PRINTERS,

18 POST OFFICE SQUARE,

1885.

385

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1885

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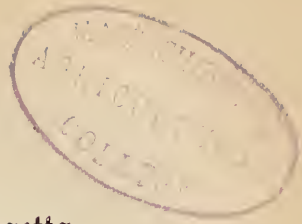
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Part I.

COMMISSIONERS' REPORT.



Commonwealth of Massachusetts.

The Railroad Commissioners respectfully submit their Sixteenth Annual Report.

RAILROAD CONSTRUCTION.

During the year ending Sept. 30, 1884, there were constructed the following additional miles of railroad in this State:—

Providence, Webster & Springfield,	10.140
Nantucket,	6.000
Boston, Winthrop & Shore,	5.550
	<hr/>
	21.690
And there was a decrease in the number of miles by a re-meas- urement on two roads, of	<hr/>
	1.240
Additional miles,	<hr/>
	20.450

MILEAGE OF RAILROADS.

The total length of railroads belonging to the corporations making returns to this Board was 2,851.743 miles of main line and branches, of which 941.627 were provided with double track. Last year the total length was 2,782.903 miles, with 825.537 miles of double track; showing an increase of 68.840 of total length, and 116.090 miles of double track. The total length of sidings was 1,165.207 miles, as against 1,109.129; showing an increase of 56.078 miles. The total length of track, considering double track and sidings as so much additional single track, is 4,958.577 miles, as against 4,717.569 of last year; the increase being 241.008 miles. Of the whole amount there are in this State, of main line 1,973.708 miles, of double track 667.889, and of sidings 832.393 miles, being a total of 3,473.990, as against 3,339.803 miles of last year; showing an increase of track in this State of 134.187 miles.

COST OF ROADS.

The average cost of standard-gauge roads is returned at \$63,133.12 per mile; the cost of equipment per mile operated

averages \$6,148.40, — making the average cost of a standard-gauge road, with equipment, \$69,281.52. The cost of narrow-gauge roads averages \$27,079.00 per mile, and \$6.213.64 per mile additional for equipment.

NUMBER OF CORPORATIONS.

Returns were received from sixty-three corporations — a net decrease of two. The Ocean Terminal, having renewed its charter, has been added to the list. The Boston, Winthrop & Shore has been added, being a consolidation of three companies — the Boston, Winthrop & Point Shirley, the Eastern Junction, Broad Sound Pier & Point Shirley, and the Boston & Winthrop — the three latter being dropped. The Boston, Clinton, Fitchburg & New Bedford, having been consolidated with the Old Colony, has ceased to make returns.

CAPITAL STOCK AND DEBT.

The aggregate capital stock was \$127,668,390.27, an increase of \$5,300,818.00, resulting from an increase of the capital stock of the following roads: —

Central Massachusetts,	\$3,745,988 00
Worcester, Nashua & Rochester,	1,310,000 00
Old Colony,	200,000 00
Lowell & Framingham,	85,900 00
Providence, Webster & Springfield,	66,000 00
Ocean Terminal,	2,000 00
Milford & Woonsocket,	48,600 00
Nantucket,	34,000 00
Milford, Franklin & Providence,	10,000 00

The Boston, Winthrop & Shore has a capital stock of \$231,800.00, of which \$19,450.00 was the capital stock of the Boston, Winthrop & Point Shirley, \$120,000.00 was the capital stock of the Eastern Junction, Broad Sound Pier & Point Shirley, and \$4,000.00 was the capital stock of the Boston & Winthrop, which companies have been consolidated under the name first mentioned. The roads of the Hopkinton, with a capital of \$165,100.00, and the Lancaster, with a capital of \$124,920.00, having been sold under foreclosure, the capital of these corporations disappears from our accounts.

The net debt of the companies — the gross debt less cash assets — amounts to \$74,439,473.75, an increase \$1,506,-

182.82. On the other hand, the cash assets of all the railroad companies of the State have decreased the amount of \$989,-134.80. The returns for the last seven years are as follows:—

YEARS.	Stock.	Net Debt.
1878,	\$119,045,229 92	\$52,646,056 24
1879,	118,390,938 88	55,755,418 06
1880,	118,738,871 58	59,172,520 25
1881,	122,155,614 12	64,850,890 76
1882,	122,976,262 26	71,913,806 00
1883,	122,367,572 27	72,933,290 93
1884,	127,668,390 27	74,439,473 75

GROSS INCOME.

The total gross income of these corporations for the year is \$43,119,302.70, a decrease of \$261,084.93; being a decrease of 0.6 per cent.

The following table gives a comparison for six years:—

YEARS.	Gross Income.	Increase from Previous Year.	Per cent. of Increase.
1879,	\$30,312,964 54	—	—
1880,	35,140,374 77	\$4,827,410 23	15.5
1881,	37,764,395 83	2,624,021 06	7.5
1882,	40,846,370 10	3,081,974 27	8.1
1883,	43,380,387 63	2,534,017 53	6.2
1884,	43,119,302 70	261,084 93*	0.6*

The total expenses—including rents paid—of all the corporations amounted to \$32,070,684.51, a decrease of \$409,223.-20. The net income was \$11,048,618.19, being an increase of \$148,138.27. The passenger earnings were \$21,207,200.42, an increase of \$604,911.29 over the year 1883, when they amounted to \$20,602,289.13. The freight earnings were \$20,-249,776.88 a decrease of \$783,734.38 from those of last year, which amounted to \$21,033,511.26.

The local passenger earnings were \$14,063,917.78, an increase of \$411,597.09 over the figures of last year, which were \$13,652,320.69. The through passenger earnings were \$5,-

* Decrease.

234,755.04, a decrease of \$10,510.15 from the amount for last year, which was \$5,245,265.19. The express, mail, and other earnings included in total passenger earnings, as given above, amounted to \$1,908,527.60, being an increase of \$203,824.35, this item having been, in 1883, \$1,704,703.25. The local freight earnings were \$9,859,079.52; in 1883 they were \$10,861,206.85, showing a decrease of \$1,002,127.33. Through freight was \$10,327,777.47, against \$10,104,560.63, an increase of \$223,216.84.

The income from all other sources of the freight department amounted to \$62,919.89, as against \$67,743.78, a decrease of \$4,823.89. The following table gives the earnings in strictly railroad business during the past ten years : —

YEARS.	Total Transportation.	Decrease or Increase from Previous Year.	Percentage.
1874-75,	\$31,494,865 19	—	—
1875-76,	29,855,800 39	\$1,639,064 80	5 24
1876-77,	28,931,987 62	923,818 87	3 10
1877-78,	28,003,236 41	928,751 21	3.21
1878-79,	29,152,829 02	1,149,592 61*	4.10*
1879-80,	33,661,822 69	4,508,993 67*	15 40*
1880-81,	35,936,302 87	2,274,480 18*	6.75*
1881-82,	39,094,369 25	3,158,066 38*	8.79*
1882-83,	41,635,800 39	2,541,431 14*	6.50*
1883-84,	41,456,977 30	178,823 09	0.43

The following tables show the passenger and freight earnings for the past ten years, and the comparative amount of passenger and freight mileage during the same period : —

YEARS.	Passenger Earnings.	Freight Earnings.
1874-75,	\$15,566,780 83	\$14,610,208 15
1875-76,	14,531,719 36	14,086,146 69
1876-77,	13,489,208 95	14,234,677 72
1877-78,	12,949,970 76	13,782,724 66
1878-79,	13,035,047 44	14,813,337 69
1879-80,	14,532,368 06	17,741,746 39
1880-81,	17,328,495 48	18,607,807 39
1881-82,	19,567,274 71	19,527,094 54
1882-83,	20,602,289 13	21,033,511 26
1883-84,	21,207,200 42	20,249,776 88

* Increase.

Passenger and Freight Mileage.

YEARS.	Total Passenger Mileage.	Total Freight Mileage.
1874-75,	655,615,588	597,868,983
1875-76,	639,592,115	628,577,176
1876-77,	605,544,855	684,810,604
1877-78,	593,060,781	715,480,187
1878-79,	616,871,131	806,064,933
1879-80,	708,645,422	959,429,750
1880-81,	788,422,761	1,080,802,796
1881-82,	892,321,207	1,130,070,652
1882-83,	943,245,658	1,220,824,418
1883-84,	1,007,136,376	1,229,368,472

The increase of passenger mileage — or passengers carried one mile — for the year amounts to 63,890,718. The increase of freight mileage, or tons of freight carried one mile, amounts to 8,544,054. The total number of passengers carried was 66,517,265, showing an increase of 4,986,518 over the previous year. The whole number of tons of freight carried was 20,273,920, as against 20,202,881; showing an increase of 71,039 tons.

EARNINGS PER MILE OF ROAD.

The average sum earned on each mile of main track and branch operated was \$11,564.01; or, computing double track as additional single track, the average per mile was \$9,157.71. The average earnings per mile, on the eight roads of standard gauge terminating in Boston, was \$11,269.17, being a decrease of \$2,089.43 per mile.

COST OF OPERATING.

The following table shows the cost of operating the roads during the past ten years, and the percentage of operating expenses, not including taxes, as compared with gross receipts:—

YEARS.	Cost of operating per Mile of Road.	Percentage of Operating Expenses to Gross Receipts.
1874-75,	\$9,329 38	70
1875-76,	8,836 40	69
1876-77,	8,494 18	68
1877-78,	7,319 51	69
1878-79,	6,576 75	65
1879-80,	7,786 00	68
1880-81,	8,146 15	68
1881-82,	8,603 10	69
1882-83,	9,192 56	71
1883-84,	8,062 12	66

GROSS AND NET INCOME.

The total gross and net income of all the corporations for ten years, and the percentage of gross and net income compared with the permanent investments, were as follows:—

YEARS.	Total Gross Income.	Percentage to Permanent Investments.	Net Income.*	Percentage to Permanent Investments.
1874-75, .	\$32,589,485 68	18.0	\$9,646,651 16	5.4
1875-76, .	31,007,448 32	18.3	9,546,820 80	5.6
1876-77, .	30,008,513 74	17.7	9,344,088 38	5.5
1877-78, .	29,053,008 76	17.0	9,232,811 98	5.4
1878-79, .	30,312,964 54	17.5	10,154,013 86	5.8
1879-80, .	35,140,374 77	19.5	11,191,815 53	6.2
1880-81, .	37,764,395 83	19.9	10,701,751 60	5.6
1881-82, .	40,846,370 10	20.5	10,902,202 95	5.5
1882-83, .	43,380,387 63	21.8	10,900,479 92	5.4
1883-84, .	43,119,302 70	20.4	11,048,618 19	5.2

The net income of 1883-84 was earned by the several corporations in the following proportions as compared with their permanent investments:—

13 companies with	\$9,298,000	permanent investment had no net income.
12 " "	42,135,000	" " " $3\frac{1}{2}$ per ct. or less.
15 " "	19,195,000	" " " $3\frac{1}{2}$ to $5\frac{1}{2}$ per ct.
12 " "	87,604,000	" " " $5\frac{1}{2}$ to $7\frac{1}{2}$ "
6 " "	36,828,000	" " " $7\frac{1}{2}$ to $9\frac{1}{2}$ "
2 " "	16,815,000	" " " $9\frac{1}{2}$ to $12\frac{1}{2}$ "
60 companies†	\$211,875,000	" " " net income‡ of 6.1 per ct.

* Gross income less total expenses and rents.

† Troy & Greenfield not included.

‡ Rents not deducted

DIVIDENDS.

The total amount of dividends paid was \$6,535,054.92, an increase of \$155,333.82 over last year. Of the 63 corporations, 33 paid dividends varying from 2 to 10 per cent. The following table shows the amount paid in dividends by all the corporations for ten years, with the percentage to capital stock, and also the amount of interest paid : —

YEARS.	Amount paid in Dividends.	Percentage to Total Capital Stock.	Interest paid.
1874-75,	\$6,733,670 93	5.97	\$3,152,862 45
1875-76,	8,858,509 49	4.95	3,704,698 38
1876-77,	5,429,183 31	4.60	3,437,026 53
1877-78,	5,589,927 40	4.68	3,126,925 34
1878-79,	5,264,431 78	4.30	3,172,990 59
1879-80,	5,987,718 64	5.05	3,423,752 25
1880-81,	6,287,866 82	5.15	3,748,292 55
1881-82,	6,271,139 86	5.10	4,291,222 59
1882-83,	6,379,721 10	5.21	4,756,085 23
1883-84,	6,535,054 92	5.12	4,729,328 56

AMOUNT OF BUSINESS.

The annual passenger and freight movement on all the roads, for ten years, appears in the following tables : —

YEARS.	No. of Passengers Carried.	No. of Passengers Carried One Mile.	Average Distance Travelled.
1874-75,	42,139,671	655,615,588	15.30
1875-76,	41,133,229	639,592,115	15.55
1876-77,	38,450,823	605,544,855	16.00
1877-78,	37,318,427	593,960,781	15.85
1878-79,	39,217,634	616,871,131	15.73
1879-80,	45,151,152	708,645,422	15.70
1880-81,	49,834,491	788,422,761	15.82
1881-82,	55,868,694	892,321,207	15.97
1882-83,	61,530,747	943,245,658	15.33
1883-84,	66,517,265	1,007,136,376	15.29

YEARS.	Tons Freight Carried.	Tons Freight Carried One Mile.	Average Distance each Ton was Carried.
1874-75,	11,072,312	579,868,983	52.25
1875-76,	11,327,502	628,577,176	55.48
1876-77,	11,910,663	684,810,604	57.40
1877-78,	12,186,545	715,480,187	58.65
1878-79,	14,401,877	806,064,933	56.00
1879-80,	17,221,567	959,429,750	55.70
1880-81,	17,971,072	1,080,802,796	60.14
1881-82,	19,061,164	1,130,070,652	59.29
1882-83,	20,202,881	1,220,824,418	60.43
1883-84,	20,273,920	1,229,368,472	60.64

The miles run by passenger and freight trains, and the total miles run by all trains for the past ten years, were as follow : —

YEARS.	MILES RUN BY —		
	Passenger Trains.	Freight Trains.	All Trains.
1874-75,	10,149,520	9,206,054	20,265,737
1875-76,	10,439,856	9,464,471	20,605,854
1876-77,	10,479,546	9,967,200	20,811,041
1877-78,	10,301,893	9,266,252	21,438,329
1878-79,	10,792,629	8,974,993	22,755,910
1879-80,	11,350,716	9,809,975	24,975,392
1880-81,	12,413,290	10,398,539	27,205,783
1881-82,	13,636,169	10,598,126	29,052,800
1882-83,	14,244,658	11,382,154	31,150,823
1883-84,	15,157,425	11,282,338	32,304,333

COST OF RUNNING TRAINS.

The average cost of running trains one mile during this year on all the roads reported, has been \$0.895. The cost of running each train mile for the past eight years was as follows : —

Cost per Total Train Mile.

1876-77,	\$0.980	1880-81,	\$0.810
1877-78, . . . .	.884	1881-82, . . . .	.863
1878-79, . . . .	.845	1882-83, . . . .	.949
1879-80, . . . .	.902	1883-84, . . . .	.895

The following table shows the cost for five years per total train mile to each of the leading corporations of the State:—

	COST PER TOTAL TRAIN MILE.				
	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.
Boston & Albany, . . .	\$0.963	\$0.887	\$0.920	\$1.003	\$0.927
Boston & Lowell, . . .	.833	.886	.867	.830	.781
Boston & Maine, . . .	.870	.879	.923	.964	.900
Boston & Providence, . .	1.044	1.066	1.268	1.275	1.220
Eastern, . . . . .	.775	.806	.867	.838	.818
Fitchburg, . . . . .	.915	.859	.890	.887	.800
New York & New England,	.846	.816	.850	.922	.932
Old Colony, . . . . .	.940	.945	1.005	1.008	.879
Connecticut River, . . .	1.130	1.051	1.019	.998	.936
New York, New Haven & Hartford,	1.055	1.059	.983	.981	.968
Providence & Worcester, .	1.030	.946	.988	1.026	1.072
Worcester, Nashua & Roch- ester, . . . . .	.838	.839	.902	.912	.841

The cost of certain specified items of train service per total train mile for the last six years is divided as follows:—

	1879.	1880.	1881.	1882.	1883.	1884.
Repairs of road-bed, . .	\$0.100	\$0.109	\$0.117	\$0.125	\$0.133	\$0.122
of bridges, . . . .	.026	.017	.020	.017	.024	.024
of rails, . . . . .	.025	.027	.032	.028	.030	.021
of locomotives, . .	.045	.056	.057	.061	.066	.060
of passenger cars, .	.057	.069	.081	.096	.092	.039
of freight cars, . .	.091	.150	.144	.141	.138	.043
Wages, . . . . .	.281	.270	.211	.279	.287	.283
Oil and waste, . . . .	.009	.010	.010	.011	.011	.010
Fuel, . . . . .	.096	.109	.122	.121	.124	.111
Totals,	\$0.730	\$0.817	\$0.794	\$0.879	\$0.905	\$0.713

The earnings for each revenue-train mile, for each passenger-train mile, and for each freight-train mile, on twelve of the principal roads in the State during the past five years, are given in the following tables:—

	EARNINGS PER TOTAL REVENUE-TRAIN MILE.				
	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.
Boston & Albany, . . .	\$1.487	\$1.394	\$1.496	\$1.638	\$1.542
Boston & Lowell, . . .	1.655	1.677	1.655	1.674	1.451
Boston & Maine, . . .	1.658	1.678	1.697	1.709	1.587
Boston & Providence, . .	1.600	1.712	1.860	1.838	1.749
Eastern,	1.560	1.605	1.637	1.648	1.580
Fitchburg,	1.479	1.378	1.451	1.532	1.394
New York & New England,	1.475	1.420	1.485	1.320	1.360
Old Colony,	1.598	1.609	1.697	1.668	1.685
Connecticut River, . . .	1.812	1.876	1.821	1.855	2.080
New York, New Haven & Hartford,	2.052	2.066	1.878	1.804	1.772
Providence & Worcester, .	2.059	1.918	1.977	2.013	1.832
Worcester, Nashua & Roch- ester,	1.327	1.341	1.420	1.440	1.384

	EARNINGS PER PASSENGER-TRAIN MILE.				
	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.
Boston & Albany, . . .	\$1.880	\$1.826	\$1.863	\$1.990	\$1.824
Boston & Lowell, . . .	1.063	1.044	.947	1.047	1.071
Boston & Maine, . . .	1.513	1.454	1.508	1.513	1.402
Boston & Providence, . .	1.386	1.463	1.601	1.563	1.499
Eastern,	1.447	1.417	1.469	1.458	1.420
Fitchburg,	1.082	.984	1.087	1.132	1.011
New York & New England,	1.010	.949	1.050	.988	1.018
Old Colony,	1.430	1.407	1.517	1.477	1.444
Connecticut River, . . .	1.218	1.286	1.290	1.253	1.593
New York, New Haven & Hartford,	1.885	2.033	1.970	1.821	1.835
Providence & Worcester, .	1.490	1.440	1.454	1.555	1.221
Worcester, Nashua & Roch- ester,	1.091	1.170	1.128	1.093	1.052

	EARNINGS PER FREIGHT-TRAIN MILE.				
	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.
Boston & Albany, . . .	\$1.324	\$1.201	\$1.283	\$1.433	\$1.359
Boston & Lowell, . . .	3.400	3.654	3.874	3.547	2.266
Boston & Maine, . . .	1.962	2.205	2.112	2.145	2.029
Boston & Providence, . .	2.163	2.364	2.501	2.579	2.498
Eastern,	1.750	1.950	1.940	1.998	1.880
Fitchburg,	1.845	1.732	1.807	1.892	1.768
New York & New England,	2.286	2.281	2.095	1.652	1.729
Old Colony,	1.888	1.969	1.999	1.997	2.177
Connecticut River, . . .	3.090	3.017	2.788	3.066	2.639
New York, New Haven & Hartford,	2.380	2.119	1.730	1.775	1.670
Providence & Worcester, .	2.643	2.462	2.559	2.513	3.205
Worcester, Nashua & Roch- ester,	1.534	1.470	1.681	1.749	1.680

FARES AND FREIGHTS.

The four following tables show the average fares on all roads, the average fares and freights for eight years on the leading roads, and the change in average rate of freight on seven roads since 1865:—

Average Fare on all Roads in the State.

1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.
\$0.0240	\$0.0240	\$0.0212	\$0.0224	\$0.0220	\$0.0200	\$0.0201	\$0.0192

Average Fares for Six Years.

	FARES.					
	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
Boston & Albany, . . .	2.14	2.08	1.97	1.99	2.08	1.91
Boston & Maine, . . .	1.93	2.06	1.99	1.95	1.97	1.90
Boston & Providence, . .	1.80	1.80	1.95	1.96	1.88	1.88
Old Colony, . . .	2.00	2.00	2.14	2.00	2.00	1.87
Boston & Lowell, . . .	2.04	1.92	1.88	1.67	1.94	2.12
Fitchburg, . . .	1.90	1.89	1.82	1.71	1.77	1.65
Eastern, . . .	2.05	1.97	1.93	1.88	1.82	1.72
New York & New England,	2.15	2.12	2.25	2.09	2.06	2.01
Connecticut River, . . .	2.61	2.59	2.53	2.48	2.36	2.37
New York, New Haven & Hartford, . . .	2.26	2.02	1.80	1.81	1.98	1.96
Providence & Worcester,	2.37	2.33	2.24	2.12	2.14	2.12
Worcester, Nashua & Rochester, . . .	2.90	2.78	2.69	2.79	2.74	2.74

Average Freights for Six Years.

	FREIGHTS.					
	1879.	1880.	1881.	1882.	1883.	1884.
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
Boston & Albany,	1.11	1.20	1.04	1.07	1.20	1.09
Boston & Maine,	2.49	2.33	2.43	2.35	2.24	2.34
Boston & Providence,	2.27	2.44	2.77	2.83	2.83	2.82
Old Colony,	2.69	2.90	2.99	3.04	3.16	3.00
Boston & Lowell,	3.35	2.95	3.13	2.60	2.98	2.33
Fitchburg,	1.30	1.37	1.26	1.18	1.19	1.09
Eastern,	2.19	1.94	2.06	2.03	1.92	1.81
New York & New England,	2.89	2.86	2.20	1.77	1.38	1.41
Connecticut River,	3.50	3.35	2.99	3.07	3.04	3.05
New York, New Haven & Hartford,	2.36	2.10	1.79	1.98	1.89	1.96
Providence & Worcester,	2.97	2.85	2.80	2.78	2.96	3.09
Worcester, Nashua & Rochester,	2.30	2.02	2.22	2.29	2.34	2.33

Average Rates of Freight, 1865 and 1884.

	Rate 1865. Cents.	Rate 1884. Cents.	Per cent. of 1884 to 1865.
Boston & Albany,	3.90	1.09	28
Boston & Maine,	4.58	2.34	51
Boston & Providence,	4.38	2.82	64
Eastern,	4.40	1.81	41
Connecticut River,	6.20	3.05	49
Fitchburg,	4.10	1.09	27
Old Colony,	3.20	3.00	94

STEEL RAIL.

During the year, 347.289 miles of steel rail were laid as against 308.228 laid last year, making the whole amount now laid 3,121.720 miles; being nearly 82 per cent. of the total of main line, including double track. The amount of steel rail laid each year for six years is shown in the following table: —

	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.
Steel rail (miles), .	179	284	154	331	308	347

ROLLING STOCK.

The increase in the number of locomotives during the year has been 105, and of passenger cars, 158; mail and baggage cars have increased 43; freight and miscellaneous cars have increased 1,693.

The following table shows the amount of rolling stock returned for the last seven years:—

	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.
Locomotives, .	1,017	1,070	1,103	1,161	1,222	1,286	1,391
Passenger cars, .	1,397	1,451	1,512	1,568	1,658	1,790	1,948
Mail and baggage cars, .	395	401	403	432	463	482	525
Freight cars, .	18,469	19,509	21,986	24,502	26,382	28,008	29,701

EMPLOYEES.

The average number of persons employed by the railroad corporations was 30,590, being 746 more than in the year before. The following table shows the number employed for each of the past eight years:—

1876-77, . . .	19,063	1880-81, . . .	25,490
1877-78, . . .	19,043	1881-82, . . .	27,403
1878-79, . . .	19,453	1882-83, . . .	29,844
1879-80, . . .	21,615	1883-84, . . .	30,590

The whole number employed by all the corporations making returns to this Board is 34,436.

STREET RAILWAYS.

Returns were received from 33 street railway companies. During the year four have been incorporated and added to the list—the Acushnet, Black Rocks & Salisbury Beach, Holyoke, and Salem & Danvers. The aggregate capital stock is \$7,732,200.00, being an increase of \$207,500.00; their gross debt has also increased \$246,764.47, and now amounts to \$4,678,431.41. The aggregate of stock and gross debt is now \$12,410,631.41.

One corporation made a dividend of 22 per cent., one of 10, six of 8, two of 7, eight of 6, one of 4, one of 3; while thirteen declared no dividends.

The average rate of dividend on the total amount of capital stock was 5.74 per cent.; and the net earnings (interest deducted) amount to 5.62 per cent. on the aggregate of capital stock and gross debt.

The whole length of track, including branches, sidings, and double track, amounts to 309,496 miles; being an increase of 3,750 miles. The average cost was \$19,736.10 per mile for permanent way, \$9,703.31 for equipment, and \$10,206.46 for land and buildings; making a total cost of \$39,645.87 for each mile of road owned. The number of round trips was 2,417,129, an increase of 125,139 over the previous year; with a mileage of 16,233,369, an increase of 895,865. Passengers were carried to the number of 94,894,259, being an increase of 6,664,463 over the number carried during the preceding year. The number of passengers carried on the street railways exceeded the number on the steam roads by 28,376,994.

The gross income was \$4,910,102.88, an increase of \$327,060.35. There was an increase of net income of \$160,033.53; with an increase of dividends paid amounting to \$6,211.00.

The average amount received for the conveyance of each passenger was 5.17 cents, and the average cost of carrying each person amounted to 4.20; the net profit to the companies being 0.97 cent, against 0.87 cent as compared with last year. The average cost of a round trip was \$1.65, with a profit of 38 cents, being an increase of 5 cents over last year.

The whole number of horses was 8,996, being an increase of 578; the number of cars was 1,921, showing an increase of 159 and the number of other vehicles was 178. The number of persons employed on street railways was 3,846, being an increase of 305 over last year. The number of accidents reported was 76, of which three were fatal. The number injured the previous year was 55; five of whom were killed.

GRADE-CROSSINGS.

The number of crossings of railroads and highways at grade, according to the returns, is 2,128, of which 677 are protected by gates or flagmen, or both.

During the year the Board has assented to one grade crossing over the Central Massachusetts Railroad in Waltham, for special reasons set forth in the report, and also to one in Gloucester over the Eastern Railroad. In this case not only was there a strong business exigency for allowing the crossing, but there were equities founded in former dealings with the corporation, and there was also some compensation for the new dangers incurred by the abolition of a very objectionable private crossing. A level crossing by the Boston & Lowell Railroad in Lawrence was also granted in territory practically part of a factory yard. The need of such crossings is fully considered elsewhere.

The Board has also allowed the construction of the Bedford & Billerica Branch across several ways in those towns; and the reasons for so doing were set forth as follows: —

“The Board never permits a level crossing without regret. In this case the regret is diminished by the character of the crossings, which are as little dangerous as such things ever can be, and by the fact that the travel over the highways is not great, nor is the traffic on the railroad likely to be large for some time. The prevailing considerations, however, are that the grade crossings now permitted are substantially the same that were allowed long since on the Billerica & Bedford Railroad, and that they are now asked for in a somewhat less dangerous form. In addition to this, it is plain that if level crossings are refused the railroad will not be constructed. It is not a question whether it shall be built with grade crossings or without, but whether the towns and the people who have once paid dearly for a railroad shall have one or not. The petition is granted, not to save the corporation expense, but to secure to the public accommodation which they greatly desire and need.

“It is unnecessary to add that the granting of this request will not prevent this or any other board from acting freely on the question of separating grades, if it should ever arise, when travel and traffic have increased. Still less would it embarrass any tribunal which should be called upon to direct the placing of a gate or a flagman at any crossing that should appear to be dangerous.”

Two level crossings of highways by railroad tracks built on the owner's land for private use were also permitted. In such cases the time and manner of use are controlled by the municipi-

pal authorities; and the rate of speed is generally limited to three or four miles an hour.

ACCIDENTS.

A tabular statement of casualties resulting from accidents on railroads in Massachusetts during the railroad year will be found in Appendix B. The whole number of persons killed or injured reported during the year was 457, being 67 less than during the preceding year. Of these 76 were passengers, being 15 more than last year; 182 were employees, 84 less than in 1882-83, a reduction of more than 31 per cent.; 38 were at grade crossings of highways and at stations; and 161 were trespassers. Of the whole number 181 resulted fatally.

Of the passengers 14 were fatally injured and 62 escaped with injuries more or less serious. Two deaths and 42 cases of injury occurred to passengers from causes beyond their own control, the only deaths and 36 cases of injury resulting from a derailment on the Boston, Barre & Gardner Railroad, on which a report was made last year. (Fifteenth Annual Report, p. 118.)

Of the employees 47 were fatally injured and 135 not fatally. The causes of the accidents were:—

By coupling or uncoupling cars,	68
By overhead bridges and other structures,	12
By train accidents,	11
By falling from train,	35
By various accidents,	56
Total,	182
Of these 139 were train men.	

The following table shows the proportion of employees killed on the principal railroads to the miles run by freight trains, including switching, with the result last year also:—

RAILROAD.	Freight Train Miles, includ- ing Switching, 1884.	Number of Employés Killed.	Proportion of Deaths to Freight Miles. 1884.	Proportion of Deaths to Freight Miles. 1883.
Boston & Albany, .	3,531,108	11	1 to 321,009+	1 to 275,000+
Boston & Lowell, .	1,129,519	2	1 to 564,759	1 to 100,000+
Boston & Maine, .	809,364	3	1 to 269,788	1 to 190,000+
Boston & Providence,	304,597	1	1 to 304,597	1 to 148,000+
Eastern, . . .	1,232,192	3	1 to 410,730+	1 to 197,000+
Fitchburg, . . .	1,489,769	6	1 to 248,295+	1 to 340,000+
New York & New England, . . .	1,751,504	4	1 to 437,876	1 to 276,072+
Old Colony, . .	1,317,993	5	1 to 263,598+	1 to 215,000+

Compared with the preceding year, the number injured, fatally or otherwise, by coupling or uncoupling cars, was 18 less, being a reduction of nearly 21 per cent. ; and the number killed or injured by falling from freight trains was 20 less, a reduction of 36 per cent. The number of the killed or injured by overhead bridges was 14 per cent. less than in the preceding year. Of course the numbers of accidents vary from year to year, and no deductions can be drawn from the reports except in a series of years. Nor can any just comparison be made in the casualties on the several roads ; but examination shows that roads that last year made an unfavorable showing of accidents to employees, this year make a much better report.

The number of casualties at highway grade-crossings and stations was 38, being 12 less than in the preceding year, and less than the average for the last ten years. On the other hand, the number of trespassers killed or injured, 161, was larger than ever before, and much above the average for the last ten years.

The number of train accidents was 27, of which 11 were collisions, but only one attended with loss of life ; and 16 were derailments, one of which, that on the Boston, Barre & Gardner Railroad, was the most serious disaster of the year.

ACCIDENTS IN THE UNITED STATES.

Tables of accidents in the United States, as reported in the "Railroad Gazette," will be found in the Appendix.

The total number of train accidents during the year ending Sept. 30, 1883, was 1,293, classified as follows:—

Collisions,	490
Derailements,	736
Other accidents,	67
	<hr/>
	1,293

This shows a decrease of 348 from the preceding year, or more than 20 per cent.

The total number of persons killed was	388
of persons injured,	1,913

— showing a decrease in the number of fatal accidents, and an increase in the number of injuries not fatal. A table giving the number and results of train accidents for ten years will be found in the Appendix.

The accidents are attributed in the "Gazette" to the following causes:—

Defects in road,	188 = nearly 15 per cent.
Defects in equipment,	204 = 16 per cent.
Negligence in operation,	493 = 39 per cent.
Unforeseen obstructions,	177 = 14 per cent.
Unexplained,	200 = nearly 16 per cent.
Malicious obstructions,	31 = .02 per cent.

ACCIDENTS IN GREAT BRITAIN AND IRELAND.

By the report of the Board of Trade on railroad accidents in the United Kingdom during the year ending Dec. 31, 1883, the total number of persons killed was 1,167, and of persons injured, 4,187. Of these, there were —

Passengers killed,	125; injured,	1,416.
Employees "	554; "	2,460.
Others "	488; "	311.

By train accidents 11 passengers were killed and 662 injured; by accidents from other causes, including their own want of caution or misconduct, 114 were killed, and 754 were injured.

Of the employees, 11 were killed and 87 injured by train accidents; and by accidents from other causes, including their own want of caution or misconduct, 543 were killed, and 2,373 were injured.

At level crossings 78 persons were killed and 51 injured, and of trespassers 293 were killed and 165 injured. Suicides numbered 61, and by miscellaneous accidents 56 persons were killed, and 95 were injured.

There were 102 collisions, in which 11 passengers and 5 employees were killed, and 477 passengers and 52 employees were injured. Derailments numbered 68, by which 22 passengers were injured, and 4 employees were killed and 9 were injured.

The most numerous causes of accident to passengers were the following: Falling from trains or platforms, 36 killed and 48 injured; falling upon platform or ballast when getting into or out of trains, 10 killed and 494 injured; while crossing tracks at stations, 38 killed and 14 injured; falling out of carriages during the travelling of trains, 7 killed, 37 injured.

A comparison of the record of accidents to passengers in the United Kingdom in the year 1883 with those in Massachusetts for the year ending September 30 shows the following results: —

<i>United Kingdom.</i>		<i>Massachusetts.</i>	
Fatal accidents to passengers,	125	Fatal accidents to passengers,	14
Passengers injured,	1,416	Passengers injured,	42
Passenger-train mileage, 138,176,940		Passenger-train mileage, 1883,	14,244,658
Passengers carried,* . 683,718,137		Passengers carried,* 1883, 48,761,327	

The passenger-train mileage thus appears to be not quite ten times as large as that of Massachusetts, and the number of passengers killed only nine times as large. Taking the number of passengers carried, the showing is still more favorable for the United Kingdom, as the number of passengers carried is fourteen times as many as in Massachusetts. This is exclusive of season-ticket passengers in both cases, the number of passages on season tickets being uncertain.

* Exclusive of season-ticket passengers.

In the case of passengers injured, however, the result is apparently altogether favorable to Massachusetts, the number injured in the United Kingdom being about thirty-four times as large as in Massachusetts. This strange disproportion undoubtedly arises from the English practice of reporting the slightest injuries. The proportion to the number of passengers carried is as follows :—

<i>In United Kingdom.</i>		<i>In Massachusetts.</i>	
Killed, 1 in	. . . 5,465,744	1 in	. . . 3,482,952
Injured, 1 in	. . . 482,851	1 in	. . . 1,160,984

Of accidents to employees, the most numerous were the following :—

While coupling or uncoupling cars, 45 were killed and 395 were injured.

While getting on or off, or falling from trains, 46 were killed and 314 were injured.

While at work on permanent way, sidings, etc, 116 were killed and 132 were injured.

While walking, crossing or standing on the line, on duty, 147 were killed and 246 were injured.

During the six months ending June 30, 1884, the whole number of persons killed was 489, and the number of persons injured was 1,889. By train accidents, 5 passengers and 15 employees were killed, and 324 passengers and 48 employees were injured. By accidents from other causes, including their own want of caution or misconduct, 53 passengers were killed and 282 were injured. Under the same head, 226 employees were killed and 1,101 were injured; and of those, 10 were killed and 167 were injured while coupling or uncoupling cars. At grade crossings, 26 persons were killed and 14 were injured; and of trespassers, 149 were killed and 83 were injured.

As compared with the United States, the train accidents in Great Britain show some marked differences. The following table shows the train accidents during a year in each country :—

Collisions in United States,	. . . 490;	in Great Britain,	. . . 107
Persons killed in United States,	187;	"	" 16
" injured " " "	634;	"	" 477
Derailments in United States,	. . . 736;	"	" 68
Persons killed in United States,	176;	"	" 4
" injured " " "	1,191;	"	" 31

The difference in the number of collisions is not very great,

when the miles of road operated and the train mileage is considered, and the proportion in the United States is the smallest. In derailments, however, there is a striking difference, after making all allowance for the difference in miles operated. Something of this may be attributed to the report in the United States of unimportant derailments of one or more freight-cars of a train, which accidents are, perhaps, not enumerated under the head of derailments in Great Britain. The difference in the casualties is more marked. The number of killed by each collision in the United States averaged 0.38; in Great Britain, 0.15, or less than half as many; while the number injured by each collision in the United States was 1.09, and in Great Britain was 4.67, or more than four times as many.

The average number of killed in each derailment in the United States was 0.23; in Great Britain, 0.06. The average number injured in the United States was 1.61, and in Great Britain, 0.45. Derailments appear to be not only less frequent in Great Britain, but less serious in their effect.

As compared with Massachusetts, the collisions in the United Kingdom, and the fatalities caused by them, are in very nearly the same proportion to the passenger-train mileage, but the number injured is very much greater in Great Britain, as will be seen by the table given below. Whether this is due to the more full report of slight injuries, to the greater number of passengers in the trains, or to the construction of the carriages, we have no means of knowing. In derailments there is the same disproportion as in the comparison with the United States.

Collisions in Massachusetts,	. . . . .	11;	in United Kingdom,	. . . . .	102
Persons killed in Massachusetts,	1;	"	"	"	16
" injured	"	3;	"	"	477
Derailments in Massachusetts,	. . . . .	16;	"	"	68
Persons killed in Massachusetts,	2;	"	"	"	4
" injured	"	41;	"	"	31

Aside from the exceptional derailment of a passenger train, which caused the 2 deaths and 36 of the 41 cases of injury, most of the derailments in this State were of one or more freight cars, and caused no loss of life or injury to persons, and were reported solely because they delayed passenger trains.

There are two classes of casualties which are much fewer in

Great Britain than in this country, viz., employees injured while coupling or uncoupling cars, and trespassers. Of employees thus injured, there were in Massachusetts 68, and in Great Britain 440. With the same proportion to miles of railroad as in Massachusetts, such accidents in Great Britain would have been more than 600, and with the same proportion to freight train miles, the number would have been about 750. Of trespassers, there were injured in Massachusetts 161, and in Great Britain 458; miles of railroad in United Kingdom, upwards of 18,000; in Massachusetts, about 2,000. The same proportion to miles of railroad as in Massachusetts would swell the number in Great Britain to more than 1,400.

While the English method of coupling freight cars is not free from danger, it apparently does not cause so many of the minor injuries, such as the loss of fingers, as our ordinary link and pin coupler. As to trespassers, the railways of Great Britain are less accessible and more fully guarded than they are here, where a trespasser is never punished unless he is struck by a train.

RECENT LEGISLATION.

Chapter 134 of the Acts of 1884 gives railroad companies the power to obtain land for additional tracks by application to the county commissioners, and thus to supply the public with increased facilities, and to give them greater safety. The power already existed when land was needed for stations or freight depots.

Chapter 279 repeals the prohibition of branch lines within eight miles of the State House. There seemed no good reason for exempting the vicinity of Boston from the general laws of the State. The prohibition was originally a private act passed in the guise of general legislation, and its only effect was to compel special legislation, or to tempt railroad companies into an evasion of law by the formation of corporations only nominally independent.

By chapter 5 the protection heretofore given to electric signals was extended to all other railroad signals.

Chapter 222 is as follows:—

“SECT. 1. Every railroad company operating a railroad or any portion of a railroad, wholly or partly within the state, shall place upon

every freight car hereafter constructed or purchased by such corporation, and upon every freight car owned by such corporation, of which the coupler or drawbar is repaired by it, with intent to use such car, such forms or form of automatic or other safety coupler at each end thereof as the Board of Railroad Commissioners may prescribe after examination and test of the same, and the Railroad Commissioners may annul any recommendation made by them.

“SECT. 2. The provisions of this act may be enforced by the supreme judicial court on application of the attorney-general.

“SECT. 3. So much of this act as relates to the examination and test shall take effect upon its passage, and the same shall take full effect on the first day of March next.”

In 1881, a special report was made by direction of the General Court, from which some extracts are given, in order to show the views of the Board then, and because those views are still regarded by the Commissioners as sound : —

“To serve the great purpose of insuring safety from coupling accidents, couplers must be automatic; and, in order to be used with advantage, they must be fitted to connect with drawbars, varying in elevation from their own: for, unfortunately, there is a wide difference in the height of freight cars, although that difference has been greatly reduced since the convention of car builders held in 1870.

“A serious difficulty arises from the existence of so many different couplers and drawbars belonging to different companies, and to companies existing under the laws of different States. As these cars are all liable to meet each other, no drawbar is desirable which will not readily couple with every other one; and, as the old link and pin still furnish the chief mode of coupling cars, no device can be adopted which cannot conveniently be used in connection with the link and pin. Moreover, the possibility of legislation by any one State is limited by the fact that its railroad cars are constantly meeting the cars of other States. The number of foreign cars at this time, or at any time, on the tracks in Massachusetts somewhat exceeds the number of domestic cars here; and over ten thousand Massachusetts freight cars are always scattered through different States.

“Any legislation hindering the free exchange of freight cars would produce great confusion and injury to business. Indeed, through freight business could not be done if one State passed a law practically forbidding the use of cars within its limits with appliances used in other States. Even if any one coupler and drawbar were shown to be perfect, Massachusetts could not legislate it into universal use within her borders without irreparable injury to her business interests;

nor can she, without crippling her railroad interests, prescribe a form of coupler for her own roads, unless it will readily unite with the devices of other States, and especially with the link and pin. Similar limitations affect any railroad company. It is not enough to show that a coupler is excellent in itself. To be used to advantage now, it must be capable of use in connection with inferior devices; and the use of a device not used by connecting roads will always expose a railroad company to inconvenience and loss, because, in case of breaking or injury to their drawbars on another road, there will necessarily be delay and extra cost in repairing the injury.

"The Board has examined many couplers, and also many models, which have great merit, and which show much ingenuity; but no report can be made with any satisfaction upon a device which has not advanced beyond the stage of a model. And even trial trips, such as we have witnessed made by two or three cars, with experiments in shackling and unshackling, do not furnish trustworthy materials for a report, until the device has been tested by continued use in the actual course of traffic."

"Many railroad managers disapprove of any law upon the subject, either not appreciating the evils arising from the present system of coupling freight cars, or having little faith in the best existing devices; but it is apparent that there are devices which will lessen the number of persons annually injured or killed while engaged in coupling freight cars, and this, when the cost and inconvenience are not disproportionate to the saving of life and suffering, is decisive.

"In reaching this conclusion the Board has been greatly influenced by the evidence furnished by the action of many railroad corporations. When fifty or more of such corporations adopt an automatic coupler, not as an experiment but as a standard, they do so in spite of the increased cost and trouble, and in spite of the natural prejudice against any new device; and they thus furnish strong testimony in favor of it.

"When, having tried such a device for a long time as an experiment, railroad managers order its universal use upon their road, they give the strongest testimony possible in its favor. One road adopting an expensive improvement in order to save life outweighs, in the value of its testimony, ten companies that have not adopted it. And it must be remembered, that, in deciding whether to use such a device or not, railroad managers balance against the question of safety the cost and inconvenience of a change, and may give more than due weight to these considerations. It must not be forgotten that, in ordinary cases of accidents to employees, no action lies against the company; and this may be one reason why safety appliances for the protection of employees are less speedily adopted than those which

protect passengers. In justice to railroad managers, it ought to be added that their backwardness in this matter is partly owing to the fact that in the belief of many no perfect device for self-coupling freight cars has yet been found; and still more, that, in their opinion, most of the accidents are owing to the recklessness of brakemen, and might be easily avoided. They cite instances where wooden or iron rods have been provided to obviate the necessity of going between freight cars to couple them, and where brakemen have declined to use them, and have looked upon their use as cowardice. There is much truth in the statements; but it is worth while to incur some expense and some inconvenience to secure the limbs and lives of men from being endangered by their own carelessness.

“There are devices which will greatly reduce the number of accidents that occur in the shackling and unshackling of freight cars, and the Board feels that preventable and fatal accidents ought not to be permitted to occur in a well-governed State.”

A bill recommended by the Board was reported in the Senate and passed by a majority of one; but was reconsidered and defeated by the same vote.

In 1883 the Board presented their views to the Joint Committee on Railroads, but they were opposed by several railroad corporations, and no action was taken.

In their report of 1884 the Board spoke as follows: —

“The great number of accidents that are due to the coupling and uncoupling of freight cars, continues to be a subject of regret. It is probable that the number returned as 86 should be increased by adding some of the 97 which are stated as resulting from various causes. The Board has more than once called attention to the subject with the hope that something might be done to lessen the amount of suffering and death arising from this cause, but it has been impossible, hitherto, to procure legislative action. The Board acknowledges now, as before, the difficulty that attends legislation upon this subject, and the fact that the adoption of life-saving devices in one State only diminishes the number of accidents, while the freight cars of other States are, as they always must be, freely used upon its roads. We have never ventured to recommend any movement except a gradual one affecting only cars that should be renewed or repaired. But it has seemed to us that a partial improvement is better than none, and that even to save a percentage of the limbs crushed and the lives lost is worth an effort.

“We have also recognized the fact that no device should be approved which would not work well with every other approved device,

and especially with the old link and pin. And inventors also have recognized this, and have always presented couplers that could be so used.

“It has also been hoped that when such a Commonwealth as Massachusetts should join Connecticut, which has the honor of leading in this humane movement, its example might have weight with other States. It is perfectly true that everything cannot be accomplished until more than thirty legislatures have acted in this matter, but to us this has seemed to be a reason for prompt action, rather than for waiting until the other thirty shall have legislated with one accord. It has seemed to the Board an unsound argument that one State should do nothing, because it cannot do all. And the natural tendency of such an argument is to throw upon Congress the duty of legislating for the protection of train hands engaged in inter-state commerce. For many reasons it seems to us better that the desired end should be obtained by the harmonious action of State governments, rather than by the intervention of federal authority.

“One reason for delay that has hitherto been urged with some success, has been the hope that the Master Car Builders' Association would agree upon some one standard freight coupler which would be adopted by all the railroad companies of the country, and so prevent the necessity of legislation. But the annual meeting of this Association for 1883 has been held without any advance toward an agreement upon this subject; and it seems to remain in the same condition in which it stood, when, in 1874, a report in favor of automatic couplers was made by F. D. Adams, Esq., the excellent Master Car Builder of the Boston & Albany Railroad, then acting as chairman of the committee on that subject, and in 1875, when another report was made by him recommending the adoption of some self-coupler.

“Since that time, thousands of brakemen have been killed or maimed in the United States for want of self-acting couplers. While the builders deliberate the brakemen perish.

“Reliance has been placed on the action of this justly respected Association because its selection of a standard height for draw-bars was so readily adopted. But it should be remembered that the adoption of a standard height cost nothing. Uniformity was clearly desirable, but it did not involve the purchase of a patent-right or the rival claims of inventors. In the selection of an automatic coupler the question is complicated by conflicting interests, and in its adoption the obstacle of cost is a serious one. It is probable that the freight coupler question will never be satisfactorily settled until the law of liability of employers to employees has been thoroughly revised. The working of a just law covering this whole subject would be likely

to supersede the necessity for special legislation as to couplers or draw-bars."

After the passage of the act, the following notice was widely published, and was sent, with the circular appended, to all inquirers on the subject: —

(CIRCULAR.)

COMMONWEALTH OF MASSACHUSETTS.

BOARD OF RAILROAD COMMISSIONERS,
No. 20 BEACON STREET,

BOSTON, May 15, 1884.

By an act of the Legislature, approved May 8, 1884, all new freight cars owned by Massachusetts railroad companies are, after March 1, 1885, to be equipped with automatic or other safety couplers, approved by this Board after examination and test thereof.

The Commissioners will, on the twenty-fifth of September next, hear, at their office, No. 20 Beacon Street, Boston, all parties desiring to set forth the merits of any safety coupler, and also any criticisms thereof by experts, and they will witness tests of such devices to be made in or near the city of Boston. The hearing will begin at 10 o'clock A.M. Records of the working of safety couplers in actual use for traffic are especially desirable.

By order of the Board,

WM. A. CRAFTS, *Clerk.*

COMMONWEALTH OF MASSACHUSETTS.

BOARD OF RAILROAD COMMISSIONERS,
No. 20 BEACON STREET,

BOSTON, ———, 1884.

Dear Sir, — In reply to your letter of inquiry, please find enclosed a circular notice with a copy of the act, under which the hearing is to be held.

Until September 25, no testimony or recommendations will be listened to. The Board having directed a public hearing, will have no private ones.

At the time fixed, we shall receive such testimony for and against any device as may be furnished, and witness such tests of those devices as shall be offered here, at the expense and under the direction of the parties desiring to exhibit them.

It is hardly necessary to add that the Board will not be expected to approve any device upon a mere model, nor even upon an experimental test, unless it is supported by a record of continued use in actual traffic.

Very respectfully,

THOMAS RUSSELL, *Chairman.*

The Board was favored by the presence of Railroad Commissioners representing Ohio, Iowa, and Michigan.

The number of entries and applications for a hearing was 176, which has since been swelled to over 200, but a much smaller number were actually presented, and still fewer were offered for actual experiments with full-sized couplers. A greater number of entries might have been anticipated; for the patents issued for freight couplers before September 25, amounted to 2,950, each of which has been declared to be the safest, cheapest and best by its owner, and by his friends among railroad men.

Among the devices exhibited, many are the product of great ingenuity, wide experience and careful thought; and an examination of them increases our respect for the grasp of human intellect, and the variety of human skill.

Much misapprehension existed as to the object of the hearing. Some regarded it as a convention of railroad experts, where questions were to be decided in town-meeting style. Others looked upon it as a "tournament" of ingenious machines, where the merits and demerits of any invention were to be reported upon, with due share of praise and "honorable mention." Others expected that it would be a mere advertising agency.

The Board simply desired practical information, enabling them to perform the duty laid upon them of prescribing forms of couplers to be used in future construction by the railroad companies of Massachusetts; and we have not thought it our duty to mention, with praise or otherwise, the various devices, which have not been approved.

The Commissioners felt bound to adhere to the rule, which was made known in advance, that they could not order the use of any coupler which had not been tested in actual traffic; and this rule was founded on the well known fact that no expert, however able, can judge of the actual working of a device merely from the inspection of a model. Such is the well established view of railroad men, whose technical skill and practical science infinitely exceed that of the Commissioners. And the man who announces that he can confidently pronounce upon the value of such a railroad invention without actual tests,

contradicts all experience, and shows himself unfit to be heard upon the question.

But the Board was importuned to prescribe for use inventions that had never been so tried,—inventions that had never passed beyond the stage of models, and indeed upon devices that were only represented by engravings. Part of this urgency was founded in the idea that we were only to *recommend* for trial a variety of improvements, while by law we were to prescribe couplers for compulsory use.

It was even said that we were precluded from acting upon any coupler that had been actually used, and that we were “shut up” to the consideration of untried devices. It was urged: “The Board wants a perfect coupler. No perfect coupler now exists, for if it existed it would have been universally adopted. Therefore some hitherto untried coupler must be adopted.”

With more plausibility it was argued: “In rejecting an untried device you may be rejecting the best. It is impossible to say that a device never tried is not the best.” This may be true in some cases, although it was sometimes possible to say that highly praised inventions could not work as well as their owners expected. But it is impossible to foretell the safe working of any such device until it has been tried, and it would be a scandal to “prescribe” the use of any coupler whose safety has not been shown by actual trial.

The sole object of the law is the safety of men employed in operating railroads. It would be a crime to add to their present dangers the perils arising from the compulsory use of an untested device.

It may be that the recognition of the merits of some inventor may be deferred. But the primary object of the law is not to aid inventors; and their ingenuity ought not to be tested at the risk of the lives and limbs of brakemen. So it is impossible to say that the best invention has yet been made or even that its author has yet been born. But after waiting so long it has been wisely thought by the Legislature that there should be no further delay in beginning to require that railroads shall procure the safest attainable device now known. While the law exists, new devices, as they prove their fitness, can still be included in the number of prescribed couplers; and

the power to annul approvals has been expressly reserved, in case of failure of those prescribed, or of their being superseded by devices manifestly superior.

We dwell upon this point, for the reason that we have received much censure from disappointed inventors, or rather from the purchasers of their inventions, because we declined to order the adoption of their devices in advance of the only possible proof that they were safe ones. Several of these gentlemen were so little informed of the duty and practice of this Board that they made written offers of liberal compensation or of a share in the profits, if their inventions could be approved and introduced into use. The Board examined all couplers presented, whether in actual use or not, receiving valuable information and ideas from many ingenious devices not so far advanced as to entitle them to compete for adoption by force of law. We did not neglect even those whose proprietors had offered a share of their profits; for a man may be wanting in good manners and good morals, and yet be the owner of a good mechanical device.

But the Board in hearing the history of coupling devices once valued and adopted for use, learned fresh lessons as to the worthlessness of theory as compared with experience and as to the folly of adopting a mechanical device, because its model appears to work well.

Not only is it unsafe to trust the working of models or of full-sized devices exhibited under favorable conditions; but traffic itself sometimes fails to test a device thoroughly, unless it is continued, general and miscellaneous traffic. An illustration of this is afforded by the experience of a Massachusetts company. Some years since, a freight coupler, after very successful exhibitions, was placed upon the milk train of one of our best roads. After working well for six months it was approved, and was about to be adopted as the standard, when the shrewd Master Builder advised its further trial in more general traffic. Fifty couplers were placed upon freight cars, and exposed to the wear and tear of use upon connecting lines, and to the rough handling of strangers. The coupler soon proved an utter failure. In the language of the Master Builder: "The conductor of the milk train had made a pet of it. He had *humored* it." A test more real and practical showed its defects.

In making their decision, the Commissioners were obliged to remember that they were not a committee appointed to select a standard freight coupler for the continent, and authorized to enforce its use, but a board charged with the humbler duty of prescribing forms of safety couplers for future application in Massachusetts which may lessen the number of casualties among the brakemen employed on her railroads.

Their jurisdiction is bounded by the narrow limits of one little State, — a State in which there are to-day and every day about an equal number of foreign and domestic freight cars, and whose own cars constantly going abroad must connect with those of every State and of the Dominion. And even in Massachusetts the Board has no authority to direct the use of safety couplers upon cars now in existence, except when the couplers or draw-bars shall need repair. Acting in a cautious spirit, and mindful of the difficulties of the subject, the legislature gave to railroad companies the full period from May, 1884, to March, 1885, in which to procure new cars or to equip old ones with couplers including draw-heads fitted for the link and pin, and thus to escape for a long time from the operation of the act; and this was done not heedlessly, but deliberately, because the General Court considered how complicated the question was; how widely the opinions of men differed about it, and especially how constant is the production of new and, possibly, of greatly improved devices.*

It will be seen, therefore, that the simple problem as to what is the best coupler was not presented to the Commission. It was to select such forms of couplers as would in the railroad world, as it exists, secure the largest amount of immunity from accident to our brakemen. And this would not necessarily be done by prescribing one form, — the best theoretical coupler, or the best when coupling with itself, — as the sole device to be used under the law.

It has been suggested that the Board would have been

* The legislation of New York is more conservative than that of Massachusetts. "After July first, eighteen hundred and eighty-six, no couplers shall be placed upon any new freight car to be built or purchased for use, in whole or in part, upon any steam railroad in this State, unless the same can be coupled or uncoupled automatically without the necessity of having a person guide the link, lift the pin by hand, or go between the ends of the cars. The corporation, person or persons operating said railroad, and violating the provisions of this section, shall be liable to a penalty of no exceeding one hundred dollars for each offence."

above all criticism if it had taken "high ground," and had selected as the only device to be used under the statute that form which, considered only by itself and as coupling with its own kind, best fulfilled the requirements of a safety coupler. Such a course might have saved criticism, but it would not have saved the lives and limbs of brakemen. And commissioners acting under a law passed for that sole object would fail of their duty if they closed their eyes to the fact that there are, and are likely to be for a long time, in use in this country more than a million of freight cars equipped with the link and pin. No coupler can be approved which will not in some way connect with these; and a coupler inferior in other respects to the best devices, if it connects automatically with the link and and pin, has, for the present, one practical advantage in the safety of its operation over the best coupler which fails of such automatic connection. At all events, a railroad company which desires to use a good automatic link and pin coupler to bridge over the transition period in railroad devices ought to be allowed to do so while awaiting the full development of safety-coupler devices.

While impressed with these views, the Board have felt bound to allow any company that desires to apply to its cars the perfected forms of couplers to do so. One or more of the couplers prescribed may be quite limited in use by Massachusetts roads for many years, and consequently may afford little relief to brakemen, but we cannot forbid the use of devices which are believed to be among the best, and likely at a future time to be generally recognized as such. •

The Board expects much aid from the action of the master car-builders. While they have no legal authority, their jurisdiction as to recommendation is far broader than that of any State commissioner or legislature, and in the very desirable work of lessening the number of couplers used, and of tending toward the use of a universal coupler, the value of their counsels cannot be over-estimated. Their action, as well as the ingenuity of inventors, has been greatly stimulated by the legislation of Massachusetts. If one or two automatic couplers shall finally be universally adopted, the increased safety assured will in part be due to her; and the result will not be less satisfactory, nor less prompt, because the General Court did not

assume authority beyond its jurisdiction, or attempt to hasten beyond reason a reform that must of necessity be slow, because it requires the concurrence of many people and many States. The couplers prescribed are the Janney, the Hilliard, the Cowell, the United States and the Ames.

OTHER DEVICES.

Many other railroad devices have been exhibited by persons desirous of obtaining the opinion of the Board as to the merits of their inventions. For more than one obvious reason, the rule of the Commission is not to express any opinion in such cases.

We have, however, witnessed the working of a well-planned and well-constructed wrecking machine, to which, in exception to our rule, we desire to call the attention of railroad managers, because we have so often had occasion to regret the delay in removing the wrecks of trains resulting from collision or derailment. In cases occurring elsewhere, the painful death of persons crushed under the wreck might have been prevented by the use of such a device. A full account of it will be found in Appendix H.

RESOLVE AS TO THE ABOLITION OF GRADE CROSSINGS.

Resolved, That the Railroad Commissioners examine and report to the next legislature upon the subject of providing for the gradual abolition of grade crossings in cities and the populous parts of towns.
[Approved April 19, 1884.]

The Board at once issued a circular asking for full returns; and in making inspection of the roads, special attention was given to this matter. Most of the companies complied promptly with these requests, giving details more or less complete.

The Providence and Worcester Railroad Company made a model report, giving a full description of every grade crossing accompanied by maps.

The general result is that there are in the State 2,128 grade crossings of railroads and highways, of which 800 are of the class referred to in the resolve. It has been thought desirable to consider the subject in the general report, not only because of its importance, but because of its close relation to other matters not strictly included in the resolve.

The number of persons injured at such crossings during the last ten years was three hundred and sixty-four (364), of whom one hundred and fifty-seven (157) were killed. These figures show the importance of the subject, and the wisdom of the General Court in directing this investigation.

1. The first question to be considered relates to the probable cost of abolishing these crossings. Estimates have been made on a few of the most costly. *We find that to abolish the Tremont Street crossing of the Boston and Providence Railroad would cost directly and in damages at least a million and a half of dollars. The crossings of the Old Colony road over Dorchester Avenue and Fourth Street could not be obviated for less than nine hundred thousand dollars. The managers of the Boston and Maine road once desired permission to bridge over Causeway and Traverse streets; and it was found that an outlay of two and a half millions would be needed. This would have included other improvements; but any plan for the abolition of the crossings named must include more than the mere bridging of these streets. It is estimated that separation of grades on the Boston and Albany road under this resolve would cost eight or nine millions of dollars. Such an estimate is of course somewhat loose, but it is made by an expert, who is specially acquainted with the facts, and it is quite as likely that the actual cost would exceed as that it would fall short of the sum named.

In Taunton there are eighteen grade crossings, twelve of them in the heart of the city on level ground. They could only be avoided by constructing an embankment like that by which the Pennsylvania Railroad enters Philadelphia. A million dollars would not pay the cost.

It must be remembered in estimating the cost of the proposed improvements, that it far exceeds the average cost of abolishing grade crossings. For the indirect damage to neighboring estates is much greater in cities and populous parts of towns than elsewhere. And it is believed that the expense of abolishing all those included in the resolve would be at least \$100,000,000, amounting therefore to 80 per cent. of the existing capital of our railroad companies.

This work, if done in a period of ten years, would call for

an annual expenditure of \$10,000,000, and for a general suspension of dividends for that period at least.

2. It should not be forgotten that every one of these crossings was made under authority of law, and by direction or permission of the tribunals appointed to decide for or against such crossings. In some cases a statute of the Commonwealth specially ordered this mode of construction. In some other cases the company desired to avoid the dangers of a grade crossing, but was, at the instance of the town authorities, compelled to construct its road at a level with the highway.

The expense of a change would be far greater than the cost of original construction over or under the highways. In many cases another route would have been chosen, by which the crossing would have been avoided, but for the favorable decision. In many the existence of a crossing has collected near it a dense population, and has thus created a great source of expense in separating grades to the injury of residences and places of business.

3. This cost is to be incurred, in great part, to save travellers from the results of their own negligence. It is hardly necessary to state that ninety-nine out of a hundred crossing accidents would be avoided if reasonable care were used by travellers. An extract from a report of last year upon signals is in point on this subject.

“ It is matter of frequent remark that time never seems of so much value as it does to men who have occasion to cross a track in the face of a coming train. And this is true not only of those who drive across, and who may consider the danger of waiting until the horse is frightened, but of many who are walking, and who do not hesitate to risk their lives for the chance of saving the fragment of a minute.

“ The law, however, aims to save persons even from the results of their own negligence. In certain cases mere want of ordinary care does not even bar an action; and especially in regard to the negligence of children, the courts consider their age, and only require such care as is reasonable under the circumstances. But when it is demanded that costly and improved devices shall be adopted, and when it is argued that it is only a question of money on the one side, and of human life on the other, it is right to remember that it is not certain that life will be saved after the expenditure has been made, and also that there is a limit to the duty of incurring expense in order

to save men and women from the natural results of their own reckless folly.

"It was testified at this hearing that in one case a traveller insisted upon forcing a passage through a half-closed gate, in spite of a coming train, and the gate-keeper's face was severely marked by the traveller's whip because the gate-keeper tried in vain to save him from death."

■

While writing this report, the Board have investigated the death of two men, who persisted in crossing a railroad track in spite of a closed gate, and in front of a moving freight train. They thought it possible to escape the train which they could see, and they succeeded. They assumed that no other train was coming, and they were wrong. An officer stationed near the spot added his warning to that which was given by the closed gate, but in vain. This accident occurred at a crossing where nothing obstructs the view of the tracks except a foot-bridge, constructed to afford a safe passage over them; and this did not affect the view of the trains then passing. Such deaths are deplorable, but it is a question how far the people should be taxed to prevent them.

These views do not lead us to regard grade crossings as desirable, or make us willing to add to their number, except for good cause. But when an enormous expenditure is proposed in order to abolish those that now exist, they justify a serious counting of the cost before any wholesale plan for that object is adopted at the expense of the public.

4. The whole expense must be borne by the community. We do not mean that a State tax is to be levied for the purpose. It has, indeed, been suggested that whenever a railroad company is willing to abolish a grade crossing the State should share the expense; but the Board has not entertained any such idea. Yet the public must truly pay for this great work, if it is done, for the stockholders in our railroad companies are a portion of the public, and most of them are residents in the State; and this Commonwealth has never regarded the owners of railroad shares as outlaws, nor has it looked upon railroad property as excluded from just protection. But in another way the general public must bear the cost of railroad improvements; for while the main end of a railroad charter is the public good, the desire of profit has always been recognized as a

lawful object in railroad subscriptions ; and a reasonable profit, estimated at a very high rate by numerous statutes, has been considered as proper. A chief element in fixing rates has always been the cost of transportation. In the language of the late Chief Justice Shaw : “ The theory of railroad corporations is that their compensation in freights and passengers’ fares is computed with reference to the whole cost of construction.” (14 Gray, 162.) This cost would be greatly increased by the proposed improvements. If the cost is shared between the railroad company and the town specially interested, it is still borne by the people. It is more than doubtful whether the public would be willing to pay, directly or indirectly, the enormous sum which would be demanded, chiefly to protect travellers from the results of their own negligence.

5. The cost is not the only burden which the community must bear in abolishing grade crossings. We have already referred to necessary changes in one city which would be a practical reconstruction of its business portion. Like inconvenience, although less in degree, would be felt in many places. Stations and freight depots are now very generally placed at level crossings for the accommodation of traffic. Great annoyance would result from breaking up this arrangement. In numerous places two-story stations must be erected ; and these are never favorites with the public. In many other places the artificial rise of twenty feet from a dead level in a densely peopled spot would not only entail injury for which damages are paid, but would cause vast inconvenience for which the law awards no recompense.

It is sometimes said by those who advocate the abolition of grade crossings that they are unknown in England. As a commentary on this argument, it is sufficient to state that during the last railroad year seventy-eight persons were killed on the level crossings of railroads in the United Kingdom. It is unnecessary to point out the reasons that require more crossings of this kind in this State and country than are found in the British Islands.

6. In one class of grade crossings the difficulties of abolition are so great that it may well be called impossible. In the vicinity of great factories, where the canals furnishing power determine the level of streets, bridges and railroads, grade

crossings exist, and must exist unless they are removed not only at serious expense, but with fatal hindrance to business. In these and in other cases some risk is run for the sake of facility in the transaction of business by which a whole community is supported. Yet the risk is not as great as that incurred in the prosecution of dangerous enterprises, or in carrying on unhealthful trades. The right of the people to reasonable security is an important one; but perhaps the right to live is a higher one, and to that end they must be sometimes secured in their right to earn a living.

7. The law already provides a way by which every level crossing in the State may be abolished, if the parties most interested desire it, and can show a proper case for action.

The railroad managers or the municipal authorities of the place where a level crossing exists may petition the county commissioners for a separation of grade. They may decree it, and order the manner of separation, with an appeal (by act of 1882) to the Railroad Commissioners. A special commission appointed by the Superior Court names the party that shall carry this order into effect, and apportions the cost between the railroad company and the town, city or county, with an appeal on this point to a jury.

It will be seen, therefore, that if the parties directly interested are willing to bear their share in the cost and inconvenience of rendering crossings safe, the law already affords a remedy. The difficulty lies in the fact that, while there is much opposition to grade crossings in general, there is strong objection in each community to the expense and annoyance of abolishing those which exist in that place.

This is the same feeling that urges the allowance of new grade crossings, and that is so much moved when they are refused. For these reasons, the law, which was expected to reduce rapidly the number of grade crossings, has greatly disappointed the hopes of its framers. It seems to the Board that there are defects in the law which hinder its working, and which might be amended with good effect.

1. The law can only be put in motion by an application of the railroad managers or of the town. Often action is delayed because each party fears that the petitioners will be subjected

to a larger share of cost, on account of being petitioners. Each waits for the other to move, and so nothing is done.

This would be remedied if the county commissioners were authorized to act on their own motion, and to adjudge separation of grade, after notifying and hearing all parties interested. This would be in analogy to the present law, by which this Board may order gates or flagmen, either on petition or on its own motion. The practical evil to be remedied is of more consequence than would be supposed if it were not demonstrated by experience.

2. The law now allows an apportionment of expenses "between the railroad corporation and the town, city or county in which said crossing is situated." Express authority is wanting for including the town *and* county. Perhaps the word "or" may be construed as meaning "and." But the doubt on this point is sufficient to deter commissioners from including counties in their award. Complete justice would require that not only the county, but more than one town might be included in the order apportioning the cost of a change.

It is easy to suppose the case of a small town with a narrow strip of territory traversed by a railroad, lying between two larger places, each of them far more deeply interested in the abolition of a level crossing than the town in which it lies. In such a case the town would not petition, and on petition of the railroad company justice could not be done to all the parties under existing laws. In analogous cases, where toll-bridges have been freed by act of the General Court, the cost has been assessed equitably between the county and the various towns in proportion to their use of the bridge.

3. By an amendment of the law made in 1882, an appeal from the county commissioners to this Board is given in decisions relating to separation of grades.

Like much general legislation, this is believed to have been designed for a special case, and intended for one railroad and one board of commissioners. It was expected to promote the abolition of level crossings. Its effect has been and will be to hinder it, because of the increased delay and expense. An additional and wholly unnecessary hearing is now imposed upon the party asking protection for the public. It is contrary to the general policy of our law, which forbids a second trial

of questions of fact already decided by a competent tribunal. In this respect it seems liable to the criticism of the venerable Justice Putnam on a similar statute long since repealed: "It would seem reasonable to allow the parties a third trial, which might well be called the rubber trial." (17 Pick., pp. 4-13.)

The present law is still further objectionable, as allowing an appeal from the appropriate tribunal to one less competent. The county commissioners are supposed to be familiar with the nature and amount of local travel, and with the needs and wishes of the community. Yet, on a question involving these facts, an appeal is given from this tribunal of the vicinage to a board of strangers.

It is respectfully suggested either that the portion of the statute allowing an appeal be repealed, or that the petitioners be permitted to select the tribunal, before which the question shall be heard once for all, as is now the case with petitions for flagmen or gates.

4. By an error in revising the law, railroad companies are not allowed to petition for the abolition of grade crossings in Boston. Such petitions must come from the city authorities, as has been shown in our Thirteenth Annual Report, pp. 109, 110. This seems to be a mere oversight. And there is no good cause for favoring the city of Boston above all other municipalities, or for exempting her from liability to respond to the petition of a railroad company desiring to abolish any one of her numerous level crossings.

5. It appears to be doubtful how damages incurred under section 129 of chapter 112 are to be assessed when no land is taken. Section 131 provides for their apportionment, but where section 130 does not apply, there is a difficulty in finding the proper tribunal for fixing the amount. The question has troubled some very intelligent county commissioners, and seems worthy of legislative consideration.

The amendments indicated above would, as we believe, make the existing law much more effective, and would in time abolish many crossings at grade.

In connection with this subject, we would once more refer to an imperfection in the law regulating the construction of highways over railroad tracks. An extract from a former report of the Board will present our views:—

“In one class of cases, the Board finds that the working of the law is attended with annoyance, and results in hardship. Where a town or highway is to be laid out or extended over an existing railroad, the petitioners generally desire a grade crossing, chiefly to avoid the expense of a bridge; often the question of having a new street depends wholly upon that. The town will lay out and construct, if a grade crossing is permitted, and will not, if a costly bridge is required. The petitioners and the town authorities come before the Board to try a question of cost, while the minds of the Commissioners are fixed on the question of safety. A decision against a grade crossing either prevents a needed improvement, or places on the town the whole cost of an expensive structure.

“In such a case, the railroad company whose structure makes the bridge necessary ought, in justice, to share the cost of the needed improvement. And if the power were given to some tribunal to determine whether a portion of the cost, and if so, what portion, should be borne by the corporation, the decisions in such cases would be more satisfactory, because they would be more equitable. Two applications have come before the Board this year in which grade crossings were refused, and which resulted in a failure to build roads which the community desired. In each of these cases the road would probably have been laid out and constructed, if this or any other tribunal had possessed the right to assess a fair proportion of the cost of a bridge upon the railroad company.”

In addition to these remarks, it may be said that there is this apparent hardship in refusing a grade crossing by a highway. Not only is the town put to expense, but the railroad company is relieved from the possible cost of maintaining a flagman or a gate tender, so that a decision intended only to promote public safety seems like a judgment that the town, and not the corporation, shall bear all the burden of saving travellers from danger.

As an illustration of the equity of our proposed change in the statute, we can refer to the action of one railroad company which, after a grade crossing had been requested and refused, voluntarily expended over \$40,000 in labor, service and materials, to aid the city of Boston in securing a safe method of crossing under its tracks. The same arguments that justified the liberal expenditure in that case will commend a general rule for like cases.

Another matter connected with this subject is the existence

of a vast number of private crossings. They probably amount to tens of thousands. Ordinarily, some danger is necessarily incident to their existence, and additional danger results from their being left unguarded in the season of their use, thus offering a chance for cattle to stray upon the railroad tracks.

But when the neighborhood in which they exist becomes densely settled, and when these private crossings are changed in effect to public crossings, although without law, they become grave sources of danger both to travellers and to passengers. It is not necessary to inquire what kind of use would establish a right of way over such a crossing. The fact is that such use does become general, and whether lawful or not it is equally dangerous. And the Board has sometimes acted on this fact in permitting highways to be laid out at a level with railroad tracks, where a frequented crossing already existed in fact, although not in law.

For this reason, as well as because of the peril always attending the existence of any grade crossing, it is worthy of consideration whether railroad corporations ought not to be allowed to call upon the county commissioners for a right to abolish a private crossing upon paying damages, to be assessed by them, with an appeal to a jury, either as to damages alone, or as to the question of discontinuance and of damages. It is hardly possible that there would be much danger of abuses in exercising such a right, since it would only be a right to incur expense for the sake of securing safety to passengers. And the amount of such expense would be fixed by a popular tribunal not likely to give undue favor to a corporation.

The course of various railroad corporations in abating these crossings by agreement is much to be commended. The Fitchburg Railroad Company especially has, within three years, abolished twenty-four private grade crossings, as well as nine public crossings. In their desire to abate such dangers, railroad managers deserve the encouragement of legislation.

CROSSINGS OF ONE RAILROAD BY ANOTHER.

By an act of 1881, now embraced in section 162, chapter 112, railroad managers adopting, at grade crossings with other roads, a system of signals approved by the Board, were excused

from the necessity of stopping their trains. This law was designed not only as a measure of convenience and despatch, but as an additional means of safety; and its passage followed immediately a fatal accident resulting from the old system of making what are known as “K. N. stops”

Four systems of interlocking signals and switches have been established under this law, with the approval of the Board, being the devices of the Union Signal Company, and they are working satisfactorily. The objection to the establishment of more lies in the cost. And this prevents some of the less prosperous roads from consenting to their adoption. There seems to be no good reason why one road crossing another at grade should not be allowed to establish and to operate such a system at its own cost, making its crossings without stopping. And the Board respectfully recommends an amendment making this lawful. It would seem desirable also to provide that if the objecting road should at any time desire to unite in the arrangement, it should be allowed to do so, upon paying a proper share of the cost.

SUNDAY TRAINS.

The subject of operating railroads on the Lord's day has come before the Board in various forms. The Commissioners have remembered that all their jurisdiction over the matter is derived from the statutes of Massachusetts, and have acted accordingly.

1. Under section 15, chapter 98, Pub. Stats., first enacted in 1881, petitions have been received for leave to run through passenger trains over the State road. The question of necessity or of high convenience calling for such trains is the only one submitted to the Board, provided the trains do not unduly interfere with the observance of the day. All other questions were settled by State legislation in enacting the law. A full report upon one of these applications will be found in the appendix. Four trains, two eastward and two westward, are running at this time under the authority of the Board, and no other trains are so run at this time.

2. There are over two hundred other trains run on Sunday over the various railroads of Massachusetts, without leave granted or asked of the Board. Besides these, thousands of

trips are made by the cars of the street railway companies. All of these have been pronounced to be in violation of law by a decision of the Supreme Court, founded upon arguments made by the counsel of one of these corporations.

The Board has been asked to prevent the operation of some roads, or to prosecute the offending companies. The Commissioners have no power whatever to prevent the operation of Sunday trains, and believe that it is not their province to promote prosecutions. Their reasons are given in a decision printed in the appendix. The enactment of laws belongs to the General Court, and their enforcement to the courts of law.

3. But we have thought it our duty to recommend to railroad managers great care in guarding against needless work on the Lord's day; in providing equivalent rest for the men deprived necessarily of repose upon that day, and generally in seeing that the bodily and mental health of their employees is not impaired by a deprivation of Sabbath rest.

Such relief from labor is a physical necessity. It can best be secured at the time when law and custom and higher considerations unite in fixing a time for general rest and quiet. It is more secure when it is regular. Any wide departure from the rule of one day's rest in seven endangers the efficiency of any body of working men, and especially of those whose nerves are constantly strained by the duties of their calling. When men engaged in continuous service make thirty, thirty-two and even thirty-seven days' work in a month, it is a source of danger to themselves and to others.

There are some who dissent from these views. They regard the lives of men just as they do steel or iron, merely as material to be expended in the service of traffic, with the sole difference that when the "life of a wheel" is worn out, it must be renewed at the cost of its owners, while no such demand is made upon employers when a man's life has been spent in their service.

Even to this class it ought to be clear that the best human material is in the long run the most economical; that the want of rest impairs the efficiency of all workmen; that inefficiency in men tends to produce accidents, and that one serious accident may counterbalance the saving made by years of the poor

economy which seeks petty gain by depriving employees of the rest demanded for them by all the laws known among men.

The managers of our railroads generally concur with these views, as to the humanity, propriety and economy of a due regard for the welfare of their employees in this respect. But the practice is permitted from want of thought rather than from any fixed intention. Sunday work increases from time to time without attracting attention. An energetic despatcher desires to see a "clear freight yard," and sends off dead freight on Sunday which might as well remain till Monday. Several trains come in Saturday evening with a few cattle cars each, and all are hauled on the Lord's day, when one train alone would have sufficed. Men are employed without cessation, simply from the inattention of their superiors. Constant vigilance is required to check the growth of needless Sabbath labor; and this vigilance is not exerted. Sound policy, regard for law and motives of humanity all concur in demanding reform upon this point.

INSPECTIONS AND HEARINGS.

Every railroad in the State has been inspected once by the Board, generally attended by a civil engineer who made a written report as to the condition of the track and bridges. In addition to this, special inspection was made in certain cases. Such suggestions as seemed necessary were conveyed to the managers and received prompt attention. In general the condition of the roads was found to be good, and in most of them improvement was noted with pleasure.

The annual hearing under the contract of the Fitchburg Railroad Company with the State for operating the Troy & Greenfield Railroad, showed the following result:—

Gross revenue,	.	.	.	.	.	.	.	.	\$470,586	83
Gross earnings,	.	.	.	.	.	.	.	.	423,992	85
Expenses,	.	.	.	.	.	.	.	.	213,245	34
Balance due the State,	.	.	.	.	.	.	.	.	210,747	51
Amount paid the State by the Fitchburg Railroad Co.,									210,767	44
Amount overpaid,	.	.	.	.	.	.	.	.	19	93

The operating expenses amount to 50.295 per cent. of the gross earnings. And this percentage of its earnings is to be

paid to each of the other operating companies. It is understood that the Fitchburg Company has appealed from the award, but as yet the appeal has not been followed up by arbitration.

SHORT HAUL LAW.

In deciding upon one petition the Board had occasion to comment upon what is known as "the short haul law," and especially to set forth what it is, and what it is not. This statute has been much discussed elsewhere, and the Board during the last two years has received from other States more inquiries upon this subject than upon all others. The act originally passed in 1871 is now contained in section 190 of chapter 112, and is as follows:—

"No railroad corporation shall charge or receive for the transportation of freight to any station on its road a greater sum than is at the time charged or received for the transportation of the like class and quantity of freight *from the same original point of departure* to a station at a greater distance on its road *in the same direction*. Two or more railroad corporations whose roads connect shall not charge or receive for the transportation of freight to any station on the road of either of them a greater sum than is at the time charged or received for the transportation of the like class and quantity of freight *from the same original point of departure* to a station at a greater distance on the road of either of them *in the same direction*. In the construction of this section the sum charged or received for the transportation of freight shall include all terminal charges; and the road of a corporation shall include all the road in use by it, whether owned or operated under a contract or lease."

We have italicized certain words, because in criticising the law it is customary to speak of it as if they were not included in the act. In fact these words constitute the essential difference between our law and the wild and unjust legislation which has sometimes been proposed. Of such propositions the Board has said in the decision referred to:—

"The words in italics are a substantive and essential part of the law, without which it could not have been passed. We have a right to say this, because such a law was proposed to the legislature, and was rejected in 1871, when the 'short haul law' was first enacted. This proposed bill read as follows:—

“‘No railroad corporation of this Commonwealth shall charge or collect for the transportation of goods or merchandise for any shorter distance, any larger amount as toll or freight than is charged or collected for the carriage of similar quantities of the same class of goods over a longer distance upon the same road.’

“But the General Court not only have not enacted such a bill, but have refused so to do, and for good reasons. It is interesting to notice that when the ‘short haul law’ of this State is censured, as it recently has been by interested parties, it is always misrepresented to be just what the petitioners supposed it to be.” (*Pittsfield v. Boston and Albany R. R. Co.*, *Appendix F.*)

The inquiry most frequently addressed to the Board upon this matter has been a question whether this law is enforced in Massachusetts, or whether it is, as has been alleged, “a dead letter.” To this the answer has been made, and it is now made once more, that no law in this State is more thoroughly enforced than this. Indeed it would be more correct to say that, instead of being enforced at all, it is universally acquiesced in and obeyed. It is true that in 1882 it was shown that a railroad company in this State was acting in violation of this law. But upon receiving the opinion of this Board that it was so offending, the corporation desisted from the practice, and lowered its rates to conform to the statute requirements. And this was done, as the managers of that corporation inform their stockholders, at the annual loss of \$37,000 illegally extorted heretofore from their customers. Since that time neither this nor any other railroad company has, to the knowledge or belief of the Board, violated this provision of the statutes. And now the fact that, because of their obedience to law, they are not indicted is used in other States to prove that our act is “a dead letter.”

In an extended investigation of freight rates made a year since with reference to other questions, and in some recent inquiries made with special reference to this question, the Board has observed the scrupulous care with which, in spite of temptations, any infraction of this law has been avoided. In exceptional cases, and to a small extent, it may work harshly,

but its general working has been most beneficial. It has remedied a great evil and a great injustice; it has helped to save small industries and small places from being crushed out of existence; it has checked the tendency to consolidation, which would build up one place or a few places at the cost of local enterprise; thus creating traffic for the railroads by giving occupation to their customers. And it is believed that any attempt to repeal this safeguard of fair dealing would receive almost universal condemnation from the business men of Massachusetts.

The number and variety of questions brought before the Board has been greater than ever before, and, as usual, the reported cases are only a fragment of the work of the Board.

These applications are of two classes. One class includes cases where by law the Board has power to make an order or award which may be enforced by the courts. And the jurisdiction of the Board in such matters has been greatly enlarged since its original establishment. But the more numerous and important class is that where the Board can only give a recommendation, and where the final sanction of its decision must be not a possible execution, but an appeal to opinion. In such cases, it may be said of the Commission, as was well said of a very different tribunal: "The decision has just as much force as there is reason for the force of that decision."

The Commissioners are well satisfied with this limit to their powers, and have never coveted the extended jurisdiction of other boards, that have authority to fix rates and charges. And the working of this advisory power has been watched with interest by many, who hope to see it applied to other interests than railroad traffic.

The Board has had more than one occasion to re-state and apply the familiar principle that, by accepting a franchise, every railroad corporation assumes the duty of furnishing reasonable facilities to the community; that these facilities must sometimes be supplied when their cost is not paid by fares and freights, and that land damages do not cover the whole price to be paid for the right to take private property for public uses. These principles are no less applicable when land

is taken, not only theoretically without consent, but actually against the will of its owners. For it has never been held to be inconsistent that a man whose estate has been subjected to a forced sale should demand full payment of the price.

These ideas are alphabetical here, and are set forth in the judgments of our greatest jurists, both living and dead. But we learn that they are received with "amazement" in portions of the country where the rights of the people are talked about more, and understood less, than they are here. Perhaps the best reply to any criticism on these views of the Board is found in the acquiescence of railroad companies in its conclusions, and in their ready compliance with its recommendations. Only one exception has occurred during the year, and upon this a special report is made by the Board.

Some of the questions reported on are in themselves of small account. But they settle questions constantly arising, and affecting a great number of people. In such matters an appeal to the Board takes the place of a long-continued suit against a powerful corporation, to be followed through all the courts, and to be contested on technical points by skilful counsel, resulting in great expense and perhaps in a nominal fine. The cheap and speedy remedy of a hearing by the Board is better for both parties, and relieves the complainants from the "sense of wrong," which is often more weighty than that wrong itself.

Other matters reported appear small to readers, because they are ignorant of the facts. During this year a well-known journal in a distant State took occasion to treat a decision of this Board with ridicule and contempt, because it recommended that a milk train should stop daily at an obscure station,—a recommendation which was promptly complied with. It did not occur to the editor that this was the only way in which the products of the land could reach a market, and that the question was whether its owners should be allowed to live and make a living on the farm which they had inherited from their fathers, or should be obliged to seek a new business, and perhaps a distant home.

The citizens of Massachusetts, instead of regarding it as a reproach, feel pride in the thought that the humblest of her people may find without delay and without cost redress against the most powerful class of her corporations.

THOMAS RUSSELL,
EDWARD W. KINSLEY,
EVERETT A. STEVENS,

Railroad Commissioners.

DEC. 31, 1884.

SPECIAL REPORT

ON TELEGRAPHIC OCCUPATION OF RAILROAD LOCATIONS.

[CHAP. 59.]

RESOLVE relative to the occupation of Railroad Locations by Companies organized for the purpose of Transmitting Intelligence by Electricity.

Resolved, That the Board of Railroad Commissioners is hereby instructed to investigate the subject of the occupation of railroad locations by more than one company organized for the purpose of transmitting intelligence by electricity, including the necessity for and propriety of such occupation, the terms and conditions under which the same may be properly and safely permitted, the character and nature of the structures to be used, the regulation of their construction, repair, maintenance and operation, and to report to the next General Court the result of their investigations, with such recommendations and suggestions as they may desire to make. [*Approved May 27, 1884.*]

After full notice a hearing was had under this resolve, and the question was argued, and testimony was introduced by able counsel representing the Baltimore & Ohio Telegraph Company in favor of legislation, and various railroad companies in opposition. No one appeared for the public or suggested any public demand for new legislation, nor did any one attend the hearing except the representatives of the above named corporations. The Commissioners regret the necessary length of this report. But when an important subject is referred to them by the General Court, it is a plain duty to investigate it thoroughly, and to report fully.

There is no serious question as to the power of the General Court to act upon this subject. Legislative authority over the railroad charters of Massachusetts is almost unlimited. Nothing is suggested as to any of these charters which forbids the legislation proposed. Nor can it be doubted that a franchise may

be taken for the public good, in whole or part, as well as any other property ; and land devoted by law to one use, has been, and may be, subjected to another use upon payment of damages.

An ingenious argument has been made to show that the proposed act would be void as conflicting with the United States Constitution and with Congressional action under it. It is said that the power of Congress to regulate internal commerce, includes the instruments of commerce, such as vessels, carriages and telegraphic lines. When Congress has acted, any State is ousted of jurisdiction, and *cannot even legislate in furtherance of the Congressional system*. But Congress has acted, first, by declaring railroads to be post roads ; secondly, by allowing telegraphic lines to be constructed on post roads, and also by granting certain privileges to telegraphic lines.

Therefore the State cannot even aid Congressional action by giving power to locate telegraphic lines adversely. Congress has one scheme. The proposed legislation sets up a different scheme. And even an act not applied in words to inter-state telegraphy would be void as attempting to place under State jurisdiction telegraphic locations which are within United States jurisdiction, and which are connected with other lines extending through more than one State. And the case of *Pensacola Telegraph Company v. Western Union Telegraph Company*, 96 U. S., is cited. That decision, however, by no means covers the point in question. It was obtained by the Western Union Telegraph Company, then appearing as a progressive enemy of monopoly, and seeking to break up the exclusive right of an established company.

The court held that an act of Florida, giving exclusive rights to one telegraph company to construct and maintain lines in certain counties, was unconstitutional and void, as conflicting with the legislation of Congress on this subject. A decision that a State cannot exclude telegraph companies from its territory does not necessarily imply that it cannot admit them.

Nor has any case gone to that length, while many decisions take it for granted that States may lawfully allow the construction and, to a certain extent, regulate the operation of railroads and telegraphs, although Congress has legislated as to their location. It was said at the hearing that the acts of many

States as to telegraphs were unconstitutional in this view. It may be added that the legislation of every State as to railroads would be set aside if this doctrine were sound.

The claim is that a State cannot by general law authorize the taking of a route for the construction of telegraphs, because Congress has by legislating on the subject deprived the States of jurisdiction. Applying this to railroads, Congress has undertaken their regulation (1) by the act of 1866 already cited, making railroads post roads; (2) by an act of July 15, 1866, authorizing connections, and the formation of continuous lines; (3) by act of Oct. 1, 1872, as to the transportation of live animals; (4) by acts regulating the span of bridges over navigable rivers. Therefore, the State cannot authorize the construction of a railroad by general law, or special charter, especially if it connects with a road in another State, or with any road so connecting. Nor is it easy to see how it can legislate as to the operation of railroads even by requiring safety devices, if Congress by acting has acquired sole jurisdiction, and disqualified the State even from "supplementary legislation."

The answer to this, whether as to telegraphic or railroad matters, is that Congress acquires exclusive authority, as to matters affecting inter-state commerce, only when it shows an intent to do so, and to regulate the whole matter; and that it has shown no such intent, either as to railroads or telegraph lines. On the contrary, the very act under consideration (sect. 5263, Gen. Stats.) assumes that the State can establish telegraph companies. Its first words are: "Any telegraphic company *now organized, or which may hereafter be organized, under the laws of any State* shall have," etc. One condition of the privileges conferred is, that the State shall have assumed jurisdiction to create a telegraphic company. And no intent is shown to prefer special legislation, or to confine the favors granted by Congress to companies that have acquired their rights with consent of the owners of the land taken for routes. The remark by the chief justice, in the case cited above, that the act of Congress only applies "whenever the consent of the owner is obtained," is a mere slip of the pen. Nothing of the kind is found in the act. To deprive the State of legislative power, there must be (1) an exclusive grant of power to

Congress in the United States Constitution, or (2) an express prohibition of State legislation, or (3) an inherent incompatibility in the existence of joint jurisdiction, or (4) an intent to exclude State regulation. Neither of these exists here. And least of all is there an intent to deprive the State of jurisdiction in an act which grants a favor to a company upon express condition that it has secured State action.*

The power to pass the proposed act may safely be assumed. But the power to pass an act does not necessarily prove its wisdom or require its passage. All things which are lawful under the constitution are not expedient. Authority to create a new danger for all travellers does not necessarily imply a duty to exercise that authority. The question of expediency is not a question between the Western Union and the Baltimore & Ohio or any other company, nor between any telegraph company and the various railroads. It is solely a question of public convenience, including of course the highest kind of convenience, the public safety. It is true that the Board has heard objections to the proposed legislation from various railroad companies, and that their opposition may be grounded partly on the fear of actions for damages resulting from adverse occupation of their tracks. But the interest of the public to prevent accidents is infinitely greater than that of the companies to avoid suits. And the danger is not that of the companies, but of the travelling public.

The general right of imposing a new use upon land devoted to a corporation for a public purpose is precisely the same with the right to take any other land, neither greater nor less. It depends upon public exigency, and upon a balance of the gain and loss to the public in so doing. The idea that because land has once been taken for a public purpose, it may therefore be more readily taken for another, or that it may be so taken with-

* The chief authority for the exclusive quality of Congressional legislation is found in *Prigg v. Pennsylvania*, but the decision by no means requires the claim. The doctrine of the case on this point is much weakened by the dissent of three judges, including the chief justice. The controlling motive of the majority seem to have been an excessive and superstitious veneration for that portion of the United States Constitution relating to the return of fugitives, which made a State act in aid of Congress appear like the presumptuous crime of attempting to steady the ark. The decision itself, which set aside a statute that would nullify a clause in the Constitution, and an act of Congress is by no means an authority for setting aside a State law consistent with an act of Congress.

out a clear exigency, is akin to the common notion that the locations of railroads are public property, which leads so many to violate the law, and to risk their lives by walking upon the tracks. Four-fifths of the land in locations is owned in fee by the railroad companies. But as to the other fifth, their ownership, while they operate the roads, is as exclusive as that of any land owners. The right of taking, in whole or in part for a new public use, land already devoted to public use, for a railroad is, as has been said, the same in principle with that of taking a portion or the whole of any man's homestead, but with this difference, in the practical application of the principle. Taking the homestead only injures the owner, and his injury will be fully paid. Taking railroad locations may endanger the public, and for this injury there is no redress. Instead of saying, "This land has once been taken for a railroad, therefore we can take it for a telegraph company," it would be more correct to say, "This land has been set apart for public use as a railroad; therefore you shall not take it for any other use, unless you can show that it will not endanger the public." This view is probably the reason why in England, where the public safety is more carefully guarded than here, no telegraphic works are permitted to be placed on railways without the consent of their managers, except that the postmaster-general may use locations for such works, when railway companies are unable or unwilling to do so.

There is no doubt that it is desirable to have in every great centre of business independent telegraphic lines, not only as a means of insuring better accommodation for the public, and cheaper rates, but as a protection against the danger of having news suppressed, or false news transmitted, to the profit of telegraphic managers, and to the injury of the public. Such a result is probable, where exclusive control of telegraphic news is given to one corporation; and when through the virtue of managers or from any other cause the evil does not arise, it is still suspected by the community. Possibly this evil can be finally cured only by governmental telegraphy. But the need of rivalry does not necessarily prove the necessity for occupying railroad locations.

It is supposed that cheaper facilities may be supplied by the cheaper construction and operation of telegraphs upon these

locations. Assuming that a hundred dollars per mile, or a little more, may be saved in the work of construction, it should be remembered on the other hand: 1. That the land damages would be far greater than those resulting from construction outside of the location or on the borders of highways. The right of way in such cases can be procured at very low rates. The right of way from Eastham to Taunton, seventy miles, was obtained for less than ten dollars. This is not likely to be repeated; but it is clear that land within a railroad location will be far more costly than the average out of a location. It has already been purchased or condemned at a high, perhaps an exorbitant, rate. The annoyance and risk would be considered; and no railroad company would be willing to have its location so occupied without payment of far more than \$100 per mile.

2. The idea of cheap construction is founded partly on the belief that the occupation of a track would carry with it the right to deposit materials between stations. And this is a separate element of danger. The views of the Board upon this point were set forth in a report of May 17, 1884 (*Baltimore and Ohio Telegraph Company v. New York and New England Railroad Company*): "It is no doubt true that in the infancy of railroads, when little business was done, certain kinds of freight, especially cord wood and manure, were received and delivered at other points than stations, and that as a favor in special cases, building materials were sometimes so delivered. But it is also true that as railroads increased their traffic, and as their managers increased in knowledge, this practice ceased to exist. And it is hardly necessary to say that on crowded roads the delivery of freight at points which are not stations, and which are without side tracks, is not only a hindrance to business, but a great cause of danger. An occasional favor of the kind referred to would not be a foundation for a request that the practice be extended, but it might well lead to a recommendation by the Board that it should be stopped. While the scattered instances of freight delivery between stations do not make a precedent for demanding such delivery as of right, it is plain that a recommendation made under the statute, founded on exceptional cases, would constitute a precedent. And this, if followed up, would seriously obstruct and endanger travel on our railroads." This right of delivery

between stations has not been granted by general laws upon the subject, and it is not given by the laws of Ohio and Louisiana to which we were referred by counsel as models:

3. It is a question as to whether inspection of telegraph lines can best be done on a railroad or on a highway, and upon this and other points we have the report of an expert whose standing and experience give great weight to his opinions. This is appended in Note A.

4. In considering the proposed advantage of constructing and operating telegraphic lines on a railroad track, we should remember that the public, while it must lose something in safety, may gain nothing in convenience or in cheapness, unless it is secured by legislation. No such legislation has been suggested by the advocates of a new law. The general question of cheapening by competition will be considered hereafter. The proposed legislation on its face only aims to relieve new corporations from pecuniary expense at the cost of increased danger to the whole travelling public. Even this object would not, as we believe, be accomplished.

The chief objection to allowing the adverse possession of railroad tracks by an indefinite number of telegraph companies lies, as has been intimated, in the increased danger to travellers. And it must be remembered that the advocates of legislation do not ask merely that a second line may be placed on railroad routes. Their whole theory, their proposed act, and the statutes to which they refer, provide for an unlimited number upon each railroad.

It needs no testimony to show that the erection of poles is a source of danger on a track. And this is at present the mode of using wires. It is also the mode adopted by those who ask for legislation. They are dangerous as possible objects of collision, as obstructions to vision and as distracting the attention of locomotive engineers. By falling they have caused fatal accidents; and more frequently such accidents have been narrowly escaped. A long list of casualties has been furnished to the Board in a report from the road department of the Boston & Albany Railroad Company (Note B), but without any such record, common sense would show the possibility of trouble from this source. It is said that all these accidents were not reported to the Board when they occurred. Some of them were

not required to be returned. But the question is not whether they were made known, but whether they occurred, and are liable to occur again. The public are not to be deprived of their right to be protected against a danger, because the servants of a corporation failed to make it known.

It is asked, if one line is permitted, why not more. Simply because two obstructions on a road are more dangerous than one; and danger increases in more than arithmetical proportion with the increase of obstacles to vision. Or if an additional number of wires be used on each pole, then the danger of falling, especially when loaded with snow or ice, is increased. The number of poles on every road should be reduced to a minimum. It is now proposed to increase the number indefinitely.

It is said that a few roads have more than one line, and if this causes danger the second line should be removed. If the second line is not needed, this ought to be done; but its existence is no reason for forcing upon the road a third and fourth, and an unlimited number of lines, each of which is confessedly more or less a source of peril. Especially would this be unjust when the roads in question are already contemplating the removal of the extra lines.

It is said in answer to the objections of railroad men, that wires may be buried underground. For the purpose of this case it might be enough to say that no legislation has been proposed here, or adopted in other States, requiring such a disposition of wires. But the Board has devoted some time to considering the question whether this is practicable. The problem is interesting not only from its bearing upon the matter before us, but because it concerns the safety of our streets, now impeded and endangered by the almost intolerable nuisance of telegraphic poles and wires. It is well known that in various places, especially in large cities, telegraphic and telephonic wires have been laid underground. As early as 1837, Prof. Wheatstone's subterranean wires were at work between London and Liverpool. And the first important line in America was in part laid under the earth. Movements now pending for subterranean construction in New York, Philadelphia, Washington and Boston, will throw much light upon this question. Inquiries were addressed to the representative of the Western Union Telegraph Company, and a very full and interesting

reply was made in print, from which extracts are given in Note A. We believe that the practical work of laying out and operating subterranean telegraphic wires will prove less difficult than is anticipated. Through the courtesy of Hon. Leopold Morse, M. C., we have received additional evidence on this point, afforded by the experience of government officials. A portion of this testimony also will be found in Note A.

The conclusion which the Board has reached on the point is, that it is very desirable that all telegraphic wires on railroad routes should be laid underground; that owing to the expense and to the difficulty of operating and keeping them in repair, this is impracticable now on long routes, although we incline to believe that it can and should be done in the streets of cities. It may be that at some future time the way will be clear for compulsory legislation, forcing all telegraphic wires on railroads to be so laid; but it would be wrong and foolish to order this now when so many hopeful experiments as to insulation and other improvements are in progress, and when so much remains to be learned as to methods.

These views, if correct, dispose of the argument that streets will be relieved by the free use of railroad locations. The relief in any event would be small. The long routes from place to place are not through streets. Wires leading from stations to business centres will still encumber the streets, and would not be diminished in number by the legislation proposed, and they will continue to be sources of annoyance and danger until the law compels their owners to place them under ground. Then the streets will be relieved without any legislation as to railroads.

The possibility of burying the wires is considered here, as it affects danger arising from the use of poles. But the dangers of joint occupation of railroads by several companies do not all spring from this source. One chief object of the legislation proposed is to secure the opportunity to inspect and repair wires. It is hardly necessary to point out the inconvenience and danger of such joint occupation by several parties. The ideal of railroad operation is the exclusive use of the track by one managing and operating head. Every departure from this is a source of danger. When there is a necessary exception to this rule, as at grade crossings, it is a misfortune, and is

attended with sad results. The presence of anybody who has a right to use the track for any other purpose than its operation is an evil. The presence of several parties is an aggravated evil, and it would be made worse by the fact that they were rivals and enemies, as would often be the case.

The dangers to be expected from joint occupation and divided management of a railroad track are illustrated by a law of this State. When railroads connect, each has a right under certain circumstances to have its traffic go over the other. It would be a convenience to each if its locomotives could pass over the other road. But knowing the dangers that would result, our law wisely forbids this, except by consent of the road to be so occupied. Joint adverse occupation would be a convenience to the corporation, but it is forbidden because it would be a peril to travellers. And in a single instance where the State has departed from this rule more than one fatal accident can be traced directly to this cause. The management of a railroad track, should be exclusive and autocratic; not for the sake of the company but for the safety of travellers. It is possible that a law enforcing the use of underground wires might diminish the anxiety of telegraph men to build on railroads. It certainly would not remove the objection of railroad managers to having their locations occupied by independent and sometimes hostile parties. The necessity for occupying the track for inspection and repairs would still be a source of annoyance and peril. We repeat that sole and exclusive tenancy is the safe rule. This is hardly violated when by agreement the railroad company allows one company the use of its tracks, by which it conducts a joint business with the railroad company, each lending the other its wires on occasion, and working in the harmony of partners, but with inspection and repairs controlled by the railroad authorities. The rule would be at an end if an unlimited number of such companies were allowed to force their way upon the track.

It seems that the call for this legislation is not an existing practical evil, so much as the theoretical objection to what is called a monopoly. And this feeling is strengthened by the fact that one company, the Western Union, has exclusive contracts with many railroad companies in this State. But zeal against monopoly will not blind wise law-givers to the dangers

that would arise from the indiscriminate use of railroad tracks by telegraphic lines. The motive of the Western Union is selfish, but the result may be beneficial to the public. And the railroad companies in securing to themselves immunity from loss promote the public safety.

It is hardly necessary to say that the exclusive contracts are no bar or hindrance to legislation. The views of the Board as to an alleged preference given to the contracting company in the distribution of telegraphic material are given in Note C.

In all of these contracts the exclusive claims are limited by the words: "So far as the company may legally refuse"—"So far as may lawfully be done"—or the like. And if these exceptions were not expressed they would be implied by law. No railroad company can bind itself to refuse facilities which by common law, or by statutes, are secured to any applicant. The State itself cannot secure to one company exclusive telegraphic facilities on a railroad track, as was held in the case already cited.

It is unnecessary to discuss this view of the subject, or to quote the cases in which an exclusive grant of a right to one railroad route has been held to be void, because no one will contend that any possible contract with the railroad companies of this State could hinder the Commonwealth from granting a right of way to other parties. No Massachusetts corporation claims the power to nullify in advance a State law. And this question should be considered precisely as if no such contracts had ever been made.

But if the Board is correct in its views, each railroad company without any contract upon the subject, would still refuse a second telegraphic line, and would act rightly in so doing. There is no difference in action between the companies that have contracts with the Western Union and those that have not. A company cannot bind itself not to admit telegraphic rivalry if public interests shall be found to demand it. A company without any contract should refuse telegraphic rivals if the public good demands such a refusal. It is an error to consider the exclusion of rival lines as an unjust preference to the first occupant of the track. The railroad reason for having a telegraphic line at all is the need of having it for the due operation of the railroad. Its reason for not admitting a second

line is that it is not needed for the road, and would be dangerous to its customers. The commercial use of it, however great, is, so far as the railroad is concerned, incidental. In bargaining for such mercantile use, the railroad company obtains wires for its own use cheaply and conveniently.

Moreover it obtains for the public such accommodation as could be gained in no other way. On the Old Colony Railroad, for instance, 133 places, some of them wholly insignificant, are under the contract furnished with telegraphic facilities and enabled to reach all parts of the continent. Their gross annual receipts average only \$144.03. This accommodation for the public could be gained in no other way than by the present system. The roads need one operator at each place; and by combining with the telegraph managers and by sharing the expenses of good and poor places, can furnish all with facilities. On another road, the Boston & Maine, the returns show at certain points receipts for the month of June, 1884, \$5.90, \$2.01, \$1.50, \$0.50. Only by the system which is called a monopoly could these telegraphic offices have been maintained. And few as the messages are, the possibility of sending them may have been of priceless worth to some of the senders.

In many small stations there is room for one operator, but not for two, least of all for two or more rivals. For it need hardly be said that two hostile operators would need more than twice as much room as one operator. Sharing this small local business with an indefinite number of parties would make it worthless, and it would cease to exist. And so, the good of the people would be sacrificed to the selfish demands of corporations. The people of these places will need more than the word "monopoly" to persuade them that for them the system is not a good one.

If it is said that the motives of the railroad corporations are also selfish, the answer is that the legislature should consult, not the motives of any corporation, but only the welfare of the public. A selfish company that promotes the welfare of the community should be encouraged. A selfish company that hinders it, should not be encouraged. And certainly a great public convenience should not be cut off simply because it is also a convenience to certain corporations.

If it is asked, how the monopoly made possible by this ex-

clusive use of tracks by one company is to be avoided, the answer is :

1. No monopoly exists. There are in operation to-day four companies connecting between New York and Boston.

2. No monopoly ever existed arising from the privilege of using railroad locations. The highways of the State furnish, under the law, avenues for telegraphic communication. Its old turnpikes are especially available, and have been freely used. If monopoly ever existed it is not because the entrance of rivals has been forbidden, but because they have sold out to the strongest company.

3. If serious evils are felt arising from the limited number of telegraphic companies, it would be well to remember that unlimited competition is not the only cure for these evils, but that State control may be applied as a remedy. Without fully discussing this point it is enough to say that a great change has taken place in public opinion as to the policy of dealing with monopoly in railroad matters. Formerly, if a railroad forty miles long ran from A to B and if its charges were too high, the remedy was to build another road between these points, at an expense of more than \$2,000,000. And in time, one of these roads was bought up by the other, and the public had to support both. This costly and clumsy method is now discontinued. The quicker, cheaper, and simpler remedy is to make complaint, and procure a reduction.

The power of the courts, acting under State or national legislation, to enforce reasonable prices and facilities cannot be doubted. The doctrine of the United States Supreme Court is that, "when private property is devoted to a public use, it is subject to public regulation." (*Munn v. Illinois*, 4 Otto, 113.) This doctrine, which was applied two centuries since by Chief Justice Holt to the common carriers of that day, has been often enforced against railroad companies, and has been extended by our highest tribunal to warehousemen and to the owners of grain elevators. Without doubt it covers telegraphic companies, which are regarded as "common carriers of intelligence." And in Massachusetts this has been expressly decided in *Pierce v. Drew* (136 Mass., 75-77) : "The transmission of intelligence by electricity is a business of a public character to be exercised under public control, in the same manner as trans-

portation of goods or passengers by railroad." The propriety of State supervision and regulation of telegraphs and telephones, with a view to the securing of proper charges for service, is one of great and pressing importance. It is only referred to here to show that it is a more effective way of preventing the dreaded evils of monopoly than the method proposed.

4. If the absence of rivals ever leads telegraphic managers to refuse proper rates, and to deny to the public proper facilities, and if State supervision is not favored, it seems that the best remedy would be found by chartering one or more rival companies upon such terms as would guarantee such rates and facilities. In such charters, conditions could be annexed to the grant securing to the public the facilities to gain which these charters would be granted, and especially securing the public against the buying off, or absorbing, of the new company by the old. Thus assurance could be had that the public good sought should not prove to be a delusion.

The great power of eminent domain, under which a right of way can be condemned without the landowners' consent, whether in the hands of an individual or a corporation, is safe in the hands of the legislature. When application is made for a grant of the right to use this power, the General Court is the best judge of the exigency, of the feasibility of the route, of the responsibility and honest intention of the petitioners. It can decide, among other things, whether the object is to serve the public, or to levy "blackmail" upon existing companies. And this last consideration is especially important regarding the wisdom of a general law for telegraphic companies, because such companies, if so disposed, would have a double chance of extortion, — one with the telegraphic line which they proposed to rival, and another with the railroad line which they threatened to embarrass. (We need not say that these remarks do not apply to the gentlemen who are urging legislation, but the law, if passed, would apply to all persons.)

The rule in this State has been to legislate specially when the right of eminent domain must be exercised. The chief exception, a general law for railroads, was supposed to be demanded on account of the conflicting claims of various projects, and because of the constant draft upon the time of legislators.

Whether this act were wise or not, it has been found neces-

sary to modify it essentially, after great loss to investors, and great injury to landowners. The cause which led to its enactment does not exist in relation to telegraphic companies. Until some exigency is shown, it would seem wise for the representatives of the people to retain in their own hands, the great sovereign power of taking property without the owners' consent, and not to delegate it to any inferior tribunal, — least of all, to intrust it to the interested parties.

It has been suggested that telegraph companies might be authorized to take land near the route of railroads, if it were not thought advisable to place them on the location. This question only arises now as a means of avoiding the danger of intruding upon railroad locations. No proof has been offered of an exigency for such a law, or of any difficulty in obtaining a right of way by bargain. The Board, therefore, does not discuss this scheme, which certainly would be far preferable to one encumbering our railroad tracks with new sources of danger. But having regard to the safety of the travelling public, the Commissioners decidedly decline to recommend any general law allowing the compulsory occupation of railroad locations for telegraphic purposes.

To persons not familiar with railroad operations, the objections of railroad managers to the proposed legislation may seem exaggerated; but so do many of their precautions against possible accident. Small obstacles, slight acts of negligence, errors apparently trivial, produce consequences out of all proportion to their apparent importance. Nothing is more common than to hear rules of precaution denounced or ridiculed by the very men who, after a fatal casualty, condemn railroad managers for not enforcing those very rules more strictly. Exceeding caution has been stimulated by many sad disasters. While the public rightly holds railroad managers to extreme care in the transportation of passengers, it should be willing to listen to them when they ask that they may be allowed to carry their passengers safely.

THOMAS RUSSELL,
EDWARD W. KINSLEY,
EVERETT A. STEVENS,

Railroad Commissioners.

SPECIAL REPORT

AS TO SCHOOL RATES ON THE BROOKLINE BRANCH OF THE
BOSTON AND ALBANY RAILROAD COMPANY.

The Appendix contains a decision upon a petition of the selectmen of the town of Brookline, asking a recommendation that fares upon the Brookline branch of the Boston & Albany Railroad be reduced. The petition, for reasons fully given, was refused, except as to the tickets of school children. Upon this point the Board recommended to the managers of the road not to abolish their practice of giving half-rates.

The words of the Board were as follows :—

“ Finally, it was stated at the hearing that the managers of the Boston & Albany Railroad intend to abolish the half-rate heretofore allowed for young persons coming to Boston for educational purposes. The practice of allowing ‘ school tickets ’ at greatly reduced rates is very general, and it is not confined to suburban travel. It is unnecessary to dwell upon the policy which justifies and demands this practice, and the Board strongly recommends to the managers of this company not to abandon it, nor to make any increase in the cost of such tickets.”

The Board being informed that the recommendation had not been complied with, again called attention to the matter by a letter ending as follows :—

“ It is unnecessary to state the reasons which make a reduction of fare for children attending school desirable. They are recognized by all the railroad companies in the State, including your company. They seem to apply with special force to places in the relative position of Brookline and Boston. And the Board renews its recommendation that tickets to young persons travelling between Brookline

and Boston for education be furnished at half-rates, or at greatly reduced prices, and that this be done promptly.”

The board of directors have now voted that it is inexpedient to comply with the recommendation of the Commissioners. The law requires us in such cases to include a report of the proceedings in our annual report.

The Commissioners did not set forth their reasons fully in their original decision, contenting themselves with a general reference to general practice and to general policy, simply because in dealing with a board of directors so intelligent it seemed needless to dwell upon points so familiar.

The matter concerns more than the local interest of a few pupils, because it involves two important questions,—the authority of the State to control its railroad corporations, and the general policy of the State in encouraging the education of the young. Upon State control there can be, under our statutes and decisions, no question, except as to the mode of exercising it. Some other States have undertaken, directly or indirectly, to fix rates for the railroad companies. The power to do this here cannot be doubted. Massachusetts has, wisely as we have thought, preferred to give her Commissioners a recommendatory power only, trusting to the force of reason in their decisions, addressed first to the Directors, and secondly to the public, reserving to the legislature the final power of enforcing a right decision.

Upon the original hearing, it appeared that a general reduction of rates was accompanied by a positive increase in the fares of children seeking education in Boston. The former price was \$5.50 for 162 school tickets, or 3.39 cents apiece. This was raised to \$6.00 for 100, or 6 cents each. The general rule of our railroad managers has been to give half-rates to young persons going to and from any place for education, including not only attendants upon schools, but also persons seeking mechanical and other practical instruction. This is in accord with the ordinary railroad policy which looks to the increase of business caused by such a reduction of rate. But the practice, as we suppose, is founded on a broader principle,—the policy of favoring education, and thus developing the resources of the State.

Under the power of the State over railroad operation, cheap morning and evening trains have been made compulsory, upon certain conditions, simply because it is for the welfare of one class of our people that such trains should be run, without regard to their profit. Upon a policy settled for more than two centuries, that of making education accessible to all, reduced fares for school children might well have been required by statute, if railroad managers had not forestalled legislative action by establishing such rates of their own free will.

We do not need to argue this question at length, for we are not proposing an innovation, but resisting one. A conservative policy, when it finds a practice well established and working well, allows it to continue, although it does not strictly accord with "the rule of three." When we find a universal rule among railroads to adopt a lower rate for one class of travelers, we may assume it to be reasonable; and in this case we find it sustained by all the honored traditions and wholesome prejudices of the State. As a matter of authority, the long continued and widely extended rule is a precedent rather than the recent and partial exceptions now introduced upon a few roads. It may be said also of these recent instances on other roads where reduced rates are not offered to suburban scholars, that it may be that there are no such scholars, and therefore there is no complaint.

Certainly we may assume that the rate paid by scholars so long was not too low. In a season of reduction, a sharp increase of a rate calls for strong evidence to support it.

It may be said that parents pay the fares, and as their own rates are reduced they can afford to pay more for their children. But this assumes that the parent or parents of each pupil are daily travellers to and from Boston. This is not shown, and probably is not true. And if it were, the rise in school fares would be unwise, because the tendency is to cause the withdrawal of the children from the school which they attend.

It is suggested that the half-rates are part of a new scheme, but they are not a necessary part of it. The plan of selling package tickets does not depend for success upon a refusal to sell half-tickets to a few students. The amount involved is insignificant as compared with the passenger receipts. If the

company decides to carry the general public at reduced rates, it does not compel an increase of scholars' rates, heretofore thought to be just and reasonable. The corporation is not in a condition to need these trifling gains; nor did the Board suppose that this was the prevailing consideration in raising these rates. It was believed that it was rather for the sake of saving trouble by establishing uniformity. And our idea was that this is a case where the trouble should be taken, in view of the important interest to be served and the more important precedent to be established.

If, however, the real objection is founded on the supposed unreasonableness of carrying pupils at lower rates than other passengers; if this is only the beginning of a plan to disturb the general rule which governs the transportation of young persons seeking education, the matter assumes new importance, and presents a case where, if ever, it is a duty to resist beginnings. In any view, the Board is not responsible for the time which may be consumed in considering this special report. It is our duty to decide upon every case properly submitted to us, whether the interested parties are many or few, and whether the amount involved is large or small. Having so decided, it is a statute requirement in a case like this to lay the facts before the General Court. But it may be, as we have suggested, that the matter concerns other than local interests, while its final result may seriously affect the usefulness of this Board in dealing with the corporations which it is designed to supervise for the public good.

THOMAS RUSSELL,
EDWARD W. KINSLEY,
EVERETT A. STEVENS,

Railroad Commissioners.

APPENDIX.

[A.]

Receipts of Flour in Boston during Ten Years, ending Sept. 30.

FLOUR—BARRELS.										
	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.
Boston & Albany Railroad, .	882,286	795,155	830,514	784,149	536,767	462,852	629,355	569,692	699,553	610,673
Boston & Lowell Railroad, .	124,315	214,664	138,914	121,416	191,265	236,443	160,704	104,376	133,491	132,825
Fitchburg Railroad, .	8,078	58,592	129,687	248,566	478,852	549,354	869,971	777,466	1,268,605	1,514,586
Grand Junction (B & A. R. R.), .	215,458	273,789	361,377	447,518	600,184	936,783	911,357	668,133	1,110,564	1,107,960
N. Y. & New England R. R., .	-	-	-	-	89,327	89,542	190,169	227,576	331,391	278,944
Total by through lines from West, }	1,230,137	1,342,191	1,463,492	1,601,649	1,896,395	2,274,974	2,761,556	2,347,243	3,543,604	3,642,788
Boston & Maine Railroad, .	45,783	38,942	43,935	32,092	42,631	28,361	29,227	13,343	16,126	9,383
Boston & Providence R. R., .	41,191	35,406	11,679	3,084	1,387	4,421	4,211	3,588	5,548	1,876
Eastern Railroad, }	-	-	-	-	2,985	6,064	11,335	4,732	9,950	11,776
Old Colony Railroad, }	1,912	2,375	841	2,685	2,162	3,392	3,646	5,115	4,390	3,218
Portland Steamer, }	4,010	3,597	2,299	220	182	150	1,893	352	459	187
New York Steamer, }	205,775	129,190	132,062	111,083	120,382	80,125	18,642	2,121	991	6,130
Baltimore Steamer, }	87,113	71,108	40,496	20,047	9,364	15,941	16,162	4,907	7,562	21,648
Philadelphia Steamer, }	10,210	12,348	7,069	5,053	1,045	1,022	300	1,625	10	1,370
New Orleans Steamer, }	-	-	-	-	-	697	-	-	225	-
Sail-Vessels, }	-	100	1,200	1,310	300	400	-	-	1,823	4,937
Other Sources, }	-	-	-	-	-	-	-	-	-	-
Total from Seaboard, }	395,994	293,066	239,581	175,574	180,438	140,573	85,646	35,783	47,084	62,725
Total from all Sources, }	1,626,131	1,635,257	1,703,073	1,777,223	2,076,833	2,418,859	2,853,079	2,383,026	3,590,688	3,705,513

Increase, 114,825 barrels, — 2 per cent.

Receipts of Corn in Boston during Ten Years, ending Sept. 30.

	Corn — Bushels.									
	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.
Boston & Albany Railroad,	1,158,500	1,179,500	1,336,180	1,219,245	1,006,160	659,467	1,349,388	807,175	927,490	1,041,005
Boston and Lowell Railroad,	159,105	144,422	534,732	534,849	617,026	3,836,219	794,534	1,355,529	571,595	510,214
Fitchburg Railroad,	324,959	861,413	1,328,430	2,003,559	3,472,195	2,897,389	3,659,457	2,640,372	4,111,500	3,876,725
Grand Junction (B. & A. R. R.),	3,271,443	5,748,309	4,731,836	5,799,140	5,855,850	7,328,338	8,560,384	3,170,842	3,386,291	4,193,700
N. Y. & New England R. R.,	-	-	-	-	23,695	29,060	177,519	329,114	843,554	363,637
Total by through lines from West,	4,914,007	7,933,644	7,931,178	9,556,793	11,014,926	14,750,473	14,541,282	8,303,032	9,840,430	9,985,881
Boston & Maine Railroad,	33,500	14,443	49,657	70,599	144,295	202,752	257,841	255,295	305,077	124,635
Boston & Providence R. R.,	-	1,010	-	-	120	-	-	-	700	800
Eastern Railroad,	-	-	-	-	11,300	5,700	2,500	7,050	16,270	6,664
Old Colony Railroad,	-	-	-	-	-	-	-	7,650	5,300	5,450
Portland Steamer,	-	-	-	-	-	-	-	-	-	-
New York Steamer,	6,500	-	8,332	6,500	-	-	-	5,000	-	-
Baltimore Steamer,	6,182	5,536	6,086	1,492	6,400	-	-	10,811	15,712	32,942
Philadelphia Steamer,	3,685	18,730	6,766	8,682	-	-	-	-	-	-
New Orleans Steamer,	-	-	-	-	-	-	-	-	16,444	-
Sail-Vessels,	-	-	-	-	-	-	-	-	-	-
Other Sources,	98,410	26,340	17,926	16,186	6,000	-	200	8,000	*72,891	5,416
Total from Seaboard,	148,277	66,059	88,767	103,459	168,115	208,528	260,541	293,806	432,394	175,907
Total from all Sources,	5,062,284	7,999,703	8,019,495	9,660,252	11,183,041	14,959,001	14,801,823	8,596,838	10,272,824	10,161,788

Decrease, 111,036 bushels, — 1 + per cent

* Savannah Steamer.

Receipts of Oats in Boston during Ten Years, ending Sept. 30.

OATS — BUSHELS.

	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.
Boston & Albany Railroad, .	954,491	841,413	791,638	656,349	728,634	604,310	1,094,476	1,411,900	1,332,825	1,754,628
Boston & Lowell Railroad, .	249,093	250,894	223,729	202,823	256,548	181,636	201,602	469,327	163,421	78,876
Fitchburg Railroad, .	715,197	1,195,267	1,718,324	1,807,810	1,828,720	1,994,597	1,751,469	1,615,072	2,734,844	3,124,318
Grand Junction (B. & A. R. R.),	580,850	431,000	416,190	377,400	592,235	720,454	663,000	472,450	558,200	702,250
N. Y. & New England R. R., .	—	—	—	—	22,600	32,341	46,650	163,000	93,118	85,260
Total by through lines } from West,	2,499,631	2,718,574	3,149,881	3,044,372	3,428,787	3,533,338	3,757,197	4,131,749	4,882,408	5,745,332
Boston & Maine Railroad, .	185,928	7,896	12,796	53,433	23,350	46,442	21,050	103,875	28,400	5,925
Boston & Providence R. R., .	—	700	—	—	—	—	—	—	—	—
Eastern Railroad,	—	—	—	—	5,700	12,950	8,100	138,835	20,005	7,100
Old Colony Railroad,	—	—	—	—	—	—	—	2,750	800	3,100
Portland Steamer,	81	—	1,440	—	—	—	—	—	—	—
New York Steamer,	—	—	—	—	—	—	—	—	—	1,437
Baltimore Steamer,	720	—	1,300	—	—	—	—	—	—	—
Philadelphia Steamer,	—	—	4,566	—	—	—	—	—	—	—
New Orleans Steamer,	—	—	—	—	—	—	—	—	—	—
Sail-Vessels,	—	—	—	—	—	—	—	—	—	—
Other Sources,	9,360	—	—	—	—	—	—	—	—	—
Total from Seaboard,	196,089	8,596	20,092	53,433	29,050	59,392	29,150	245,460	49,205	17,562
Total from all Sources, . . .	2,695,720	2,727,170	3,169,973	3,097,805	3,457,787	3,592,730	3,786,347	4,377,209	4,931,613	5,762,894

Increase, 831,281 bushels, — 16 + per cent.

Receipts of Wheat in Boston during Ten Years, ending Sept. 30.

	WHEAT — BUSHELS.									
	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.
Boston & Albany Railroad, .	166,924	137,373	264,275	130,618	174,310	65,691	50,525	28,700	36,005	24,900
Boston & Lowell Railroad, .	83,055	52,190	38,800	298,654	916,431	981,761	337,253	250,641	198,731	94,666
Fitchburg Railroad, .	5,836	22,205	50,870	233,416	1,306,085	724,743	994,446	918,763	990,289	842,602
Grand Junction (B. & A. R. R.),	830,375	223,600	678,380	3,441,910	2,753,450	2,436,921	2,832,769	1,458,400	1,037,170	722,100
N. Y. & New England R. R., .	-	-	-	-	7,568	34,232	955	175,400	295,100	103,674
Total by through lines from West, }	1,086,190	435,368	1,032,325	4,104,598	5,157,844	4,243,348	4,215,948	2,831,904	2,557,295	1,787,402
Boston & Maine Railroad, .	1,400	-	112	400	27,448	53,522	23,932	37,884	17,957	10,400
Boston & Providence R. R., .	5,362	1,012	1,614	770	1,601	102	-	-	10,000	600
Eastern Railroad, .	-	-	-	-	-	-	-	800	1,015	1,400
Old Colony Railroad, .	-	-	-	-	-	-	-	500	-	-
Portland Steamer, .	-	-	-	-	-	-	-	-	-	-
New York Steamer, .	200	200	150	2,452	-	-	-	-	-	-
Baltimore Steamer, .	2,285	4,175	163	-	-	-	-	-	-	-
Philadelphia Steamer, .	-	-	-	-	-	-	-	-	-	-
New Orleans Steamer, .	-	-	-	-	-	-	-	-	-	-
Sail-Vessels, }	11,200	-	46,333	35,017	-	-	-	-	-	4,500
Other Sources, }	-	-	-	-	-	-	-	-	-	-
Total from Seaboard, .	20,447	5,387	48,372	38,639	28,449	53,624	23,932	39,184	28,972	16,900
Total from all Sources, .	1,106,637	440,755	1,080,697	4,143,237	5,186,293	4,296,972	4,239,880	2,871,088	2,586,267	1,804,302

Decrease, 781,965 bushels, — 30 + per cent.

*Domestic Exportations from the Port of Boston during the Fiscal
Year ending June 30, 1884.*

COMMODITIES.	Quantities.	Values.
Animals, living, cattle, hogs, horses, mules and sheep (number),	99,080	\$8,020,389 00
Animals, all other, and fowls,	—	50 00
Barley (bushels),	10,350	6,556 00
Indian Corn (bushels),	4,749,345	3,128,742 00
Indian Cornmeal (barrels),	99,446	297,141 00
Oats (bushels),	5,523	2,737 00
Oatmeal (pounds),	8,240,852	258,392 00
Rye (bushels),	40,977	29,884 00
Rye Flour (barrels),	17	73 00
Wheat (bushels),	1,368,792	1,445,305 00
Wheat Flour (barrels),	1,971,898	12,658,611 00
Beef, fresh (pounds),	21,622,340	2,169,437 00
Beef, salted or pickled (pounds),	6,510,551	461,693 00
Beef, canned,	—	155,587 00
Mutton (pounds),	86,629	7,645 00
Bacon and Hams (pounds),	55,966,477	5,614,347 00
Pork, fresh,	None.	None.
Pork, salted or cured (pounds),	6,334,521	529,139 00
Lard (pounds),	44,655,269	4,474,568 00
Butter (pounds),	2,244,802	494,158 00
Imitation Butter,	23,349	3,285 00
Oil of Oleomargarine (pounds),	1,384,392	157,904 00
Cheese (pounds),	7,568,741	814,678 00
All other articles,	—	21,797,679 00
Total,		\$62,528,000 00

New York, New Haven & Hartford, .	3	-	2	-	1	-	3	2	1	-	-	-	1	139	43	68	12
Norwich & Worcester, .	3	-	3	-	1	-	3	1	1	-	-	-	1	2	1	1	1
Providence & Worcester, .	4	-	2	-	2	-	3	1	1	-	-	-	1	1	1	1	1
Troy & Greenfield, .	19	-	12	-	7	-	19	8	8	-	-	-	4	8	4	4	4
Worcester & Nashua, .	5	-	1	-	3	-	4	3	2	-	-	-	1	-	1	-	-
Housatonic, of Connecticut,	2	-	-	-	2	-	1	2	1	-	-	-	-	-	-	-	-
Boston, Revere Beach & Lynn, .	1	-	-	-	1	-	1	1	1	-	-	-	-	-	-	-	-
Boston & Winthrop, .	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grafton Centre, .	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Martha's Vineyard, .	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nantucket, .	1	-	1	-	-	-	1	1	1	-	-	-	1	-	1	-	-
Worcester & Shrewsbury, .	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total,	457	76	182	38	161	33	424	181	276	2	42	12	20	139	43	68	12

* Employees not on duty, 2; employee of Coal Co., 1; employee of Tel. Co., 1.

† By post of drawbridge, 1; by electric signal stand, 1; by freight house, 1.

*Train Accidents reported to the Board of Railroad Commissioners
during the Year ending Sept. 30, 1884.*

COLLISIONS.	Number of Accidents.	Persons Killed.	Persons Injured.
<i>Rear Collisions.</i>			
Engine with rear of freight train,	1	-	-
Freight train with rear of freight train,	1	-	-
Parts of separated freight train,	1	-	-
Total rear collisions,	3	-	-
<i>Butting Collisions.</i>			
Passenger train with passenger train,	1	-	1
Freight train with freight train,	1	1	2
Passenger train with freight cars on siding (misplaced switch),	1	-	-
Freight train with gravel train,	1	-	-
Total butting collisions,	4	-	-
Total collisions,	11	1	3
DERAILMENTS.			
Passenger trains,	3	2	41
Freight trains,*	11	-	-
Engines derailed,	2	-	-
Total derailments,	16	2	41
Total train accidents, etc.,	27	3	44

* Most of the derailments were comparatively unimportant, and were reported because of delay to passenger trains.

Tabular Statement of Accidents reported to the Board of Railroad Commissioners during Ten Years.

	GENERAL STATEMENT.								PASSENGERS.				EMPLOYEES.		
	Whole Number of Persons Injured.	PASSENGERS.	EMPLOYEES.	At Highway Crossings and Stations.	TRESPASSERS.	CHILDREN.	ADULTS.	FATAL.	Not fatal.	From Causes beyond their own control.	From their own Misconduct or Want of Care.	FATAL.	Not fatal.	Train-men.	Other Employees.
Year ending Sept. 30, 1875,	242	36	84	19	103	13	229	132	110	6	30	12	24	64	20
“ “ 1876,	231	39	62	41	89	29	202	114	117	4	35	10	29	43	19
“ “ 1877,	274	83	95	37	109	26	248	134	140	9	24	7	26	65	30
“ “ 1878,	304	38	96	37	133	37	267	150	154	2	36	10	28	68	28
“ “ 1879,	405	208	83	32	82	25	380	115	290	186	23	21	188	71	12
“ “ 1880,	346	24	157	54	111	24	322	146	200	1	23	9	15	113	44
“ “ 1881,	415	42	200	47	126	23	392	184	231	11	31	15	27	167	33
“ “ 1882,	414	27	198	57	132	29	385	163	251	4	22	9	15	158	40
“ “ 1883,	524	61	266	50	147	33	491	191	333	1	24	14	21	192	73
“ “ 1884,	457	76	182	38	161	33	424	181	276	44	32	14	62	139	43
Total, .	3,612	584	1,423	412	1,193	302	3,340	1,510	2,102	268	280	121	435	1,060	342
Average, .	361.2	58.4	142.3	41.2	119.3	30.2	334.	151.	210.2	26.8	28.	12.1	43.5	106.	34.2

Tabular Statement of Accidents, etc., during Ten Years — Concluded.

	EMPLOYEES — Concluded.							AT HIGHWAY CROSSINGS.				AT STATIONS.		TRESPASSERS.				
	Coupling or uncoupling Cars.	By overhead Bridge.	By Train Accidents.	Falling from Train.	Various Causes.	Fatal.	Not Fatal.	With Gates or Flagman.	Without Gates or Flagman.	Fatal.	Not Fatal.	Fatal.	Not Fatal.	Walking or Lying on Track.	Unlawfully Riding on Cars.	Fatal.	Not Fatal.	Suicide.
Year ending Sept. 30, 1875,	23	5	9	21	26	27	57	8	10	13	5	1	—	91	12	68	35	1
“ “ 1876,	20	6	8	12	16	29	33	14	24	13	25	3	—	64	25	59	30	—
“ “ 1877,	25	5	21	18	26	35	60	12	21	19	14	2	2	79	30	71	38	8
“ “ 1878,	24	10	15	15	32	34	62	12	17	20	9	3	5	102	31	84	49	3
“ “ 1879,	25	7	8	24	19	28	55	13	17	13	17	1	1	70	12	54	28	5
“ “ 1880,	43	12	21	47	34	49	108	20	30	19	31	1	3	93	18	72	40	4
“ “ 1881,	59	28	18	46	48	72	128	12	24	11	25	5	6	104	22	81	45	3
“ “ 1882,	60	18	15	43	62	56	142	25	29	21	33	3	—	109	23	75	57	7
“ “ 1883,	86	14	13	55	97	62	203	18	26	15	29	4	2	112	33	93	54	3
“ “ 1884,	68	12	11	35	56	47	135	19	13	13	19	4	2	126	35	104	57	4
Total, . . .	433	117	139	316	416	439	983	153	211	157	207	27	21	950	241	780	433	38
Average, . . .	43.3	11.7	13.9	31.6	41.6	43.9	98.3	15.3	21.1	15.7	20.7	2.7	2.1	95.	24.1	78.	43.3	3.8

Tubular Statement of Accidents to Employees in Massachusetts.

YEAR ENDING SEPT. 30.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.
Injured by coupling cars, . . .	23	20	25	24	25	43	59	60	86	68
by overhead bridges, . . .	5	6	5	10	7	12	28	18	14	12
by train accidents, . . .	9	8	21	15	8	19	18	15	13	11
by falling from trains, . . .	21	12	18	15	24	47	46	43	55	35
by other causes, . . .	23	16	26	30	17	34	47	62	97	56
by explosion of locomotives, . . .	3	—	—	2	2	2	2	—	—	—
Totals, . . .	84	62	95	96	83	157	200	198	265	182

Tubular Statement of Train Accidents, and Causes of the same, in the United States in each Month during the Year ending Sept. 30, 1884.

	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	Total.
COLLISIONS.													
Rear collisions,	58	35	38	31	17	23	11	20	11	25	20	27	316
Butting collisions,	20	12	10	14	13	15	11	11	8	10	6	16	146
Crossing collisions,	4	2	4	4	1	1	2	2	1	1	2	3	27
Passing collisions,	—	1	—	—	—	—	—	—	—	—	—	—	1
Total,	82	50	52	49	31	39	24	33	20	36	28	46	490
DERAILMENTS.													
Caused by —													
Unexplained,	24	15	17	28	15	13	18	10	12	15	17	16	200
Broken rail,	4	4	7	18	10	10	1	1	1	—	2	1	59
Broken bridge,	2	4	3	3	3	4	1	2	3	5	3	2	35
Broken axle,	7	4	4	1	2	2	4	2	3	2	5	4	40
Broken truck,	3	1	2	2	—	1	1	2	—	2	3	—	17
Accidental obstruction,	7	7	4	5	9	3	2	3	2	2	4	2	50
Cattle on track,	6	3	—	1	2	—	3	2	—	4	—	6	27
Misplaced switch,	7	7	8	6	11	5	6	4	8	4	6	8	80
Malicious obstruction,	1	3	—	—	1	—	1	—	3	—	2	1	12
Running off end of siding,	—	—	1	—	—	—	—	—	—	—	—	—	1
Broken wheel,	3	6	1	4	—	8	3	—	1	—	—	—	27
Open draw,	1	—	1	—	2	1	—	—	—	—	—	—	6
Defective frog,	—	—	—	1	—	1	1	—	—	—	—	—	1
Loose wheel,	—	—	—	—	—	—	—	1	—	—	—	—	1
Runaway engine or train,	—	—	—	—	—	2	—	1	—	1	—	—	3

Spreading of rails,	12	4	5	7	6	8	13	5	7	6	7	2	82
Broken rail-joint,	1	-	-	1	-	-	-	-	-	-	-	-	1
Rail accidentally misplaced,	-	-	-	-	-	1	-	-	-	-	-	-	1
Bridge purposely burned,	-	-	-	-	-	-	-	-	-	-	-	1	1
Broken coupling,	-	-	-	-	2	5	6	3	3	-	-	1	2
Wash-out of track,	-	3	-	-	2	2	-	-	-	1	-	1	24
Snow or ice,	-	-	-	2	2	5	-	-	-	-	-	-	6
Land-slide,	1	1	1	2	4	5	-	-	1	2	1	1	19
Rail out for repairs,	1	1	2	-	-	-	-	1	1	-	-	-	5
Wind (trains blown from track),	1	1	-	-	1	1	-	-	-	-	-	-	4
Broken switch-bar,	-	-	1	-	-	-	-	-	-	-	-	-	7
Misplaced switch, maliciously,	1	3	1	5	1	-	-	-	-	-	1	-	7
Rail removed maliciously,	1	-	1	-	1	-	1	-	2	-	1	-	6
Flying switch,	2	3	-	-	-	-	-	-	-	1	1	-	6
Bridge removed for repairs,	-	1	-	-	-	-	-	-	-	-	-	-	1
Total,	85	70	57	86	71	72	60	38	47	46	54	50	736

Tabular Statement of Train Accidents in the United States in each Month during the Year ending Sept. 30, 1884.

	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	Total.
ACCIDENTS WITHOUT DERAILMENT.													
Caused by —													
Cylinder head blown out,	3	—	2	—	2	1	1	—	—	—	4	—	2
Boiler explosion,	3	1	1	3	1	1	1	2	1	3	1	2	19
Car burned while running, . . .	—	1	1	6	—	1	1	1	1	—	2	1	15
Broken connecting-rod,	1	—	—	2	3	1	1	—	—	—	—	—	15
Broken axle or truck,	—	—	—	1	2	1	1	—	—	—	—	—	7
Broken wheel or tire,	—	—	—	—	—	—	—	—	—	2	—	—	4
Accidental obstruction,	—	—	—	—	—	—	—	—	—	1	—	—	2
Dynamite explosion,	—	—	—	—	—	1	—	—	—	1	—	—	2
Bursting of oil-tank,	—	—	—	—	—	—	—	—	—	—	—	1	1
—	7	2	3	12	8	4	4	5	4	7	7	4	67
Number of accidents in each month caused directly by defect or failure of road or equipment,	53	33	32	52	33	42	28	21	19	24	33	22	392
Total number of train accidents in each month in 1883-84,	174	122	112	147	110	115	88	76	71	89	89	100	1,593
Total number of train accidents in each month in 1882-83,	136	125	148	168	184	142	105	120	91	119	145	158	1,641
Total number of train accidents in each month in 1881-82,	131	133	113	137	88	99	81	94	72	92	139	153	1,332
Total number of train accidents in each month in 1880-81,	120	145	135	223	149	113	63	85	73	12	129	144	1,381
Total number of train accidents in each month in 1879-80,	104	86	69	62	65	65	71	46	56	78	112	124	958

Total number of train accidents in each month in 1878-79,	61	68	63	113	88	61	50	37	64	81	79	78	843
Total number of train accidents in each month in 1877-78,	82	83	66	75	67	49	46	50	56	54	75	76	777
Total number of train accidents in each month in 1876-77,	103	96	88	147	56	58	69	46	49	53	98	84	947
Total number of train accidents in each month in 1875-76,	88	87	84	60	91	109	56	64	52	79	78	106	954
Total number of train accidents in each month in 1874-75,	81	82	74	131	211	122	60	54	61	73	114	116	1,179
Total number of train accidents in each month from Sept. 30, 1874, to Sept 30, 1884,	1,080	1,027	952	1,263	1,109	933	690	672	645	820	1,057	1,139	11,387
Derailment of passenger trains 1883-84,	32	30	21	40	33	26	22	12	13	12	19	21	281
Derailment of freight trains,	53	40	36	46	38	46	38	26	34	34	35	29	455
Total,	85	70	57	86	71	72	60	38	47	46	54	50	736
Number of persons killed,	19	12	15	21	9	15	17	5	23	8	21	11	176
Number of persons injured,	154	175	65	146	109	63	140	69	67	64	78	81	1,191
Collision between passenger trains,	4	2	11	8	3	3	2	2	1	3	3	6	48
Collision between passenger and freight trains,	17	12	12	19	9	6	4	11	8	10	3	14	125
Collision between freight trains,	61	36	29	22	19	30	18	20	11	23	22	26	317
Number of persons killed,	23	22	15	32	13	11	2	27	17	8	8	9	187
Number of persons injured,	72	60	41	65	40	48	27	81	35	43	30	92	634

Tabular Statement of Train Accidents, Casualties, etc., 1883-84. — Concluded.

	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	Total.
ACCIDENTS WITHOUT DERAILMENT,	7	2	3	12	8	4	4	5	4	7	7	4	67
to passenger trains,	2	-	1	10	5	2	1	2	2	3	2	1	31
to freight trains,	5	2	2	2	3	2	3	3	2	4	5	3	36
Number of persons killed,	1	-	2	3	-	-	-	-	-	9	9	1	25
Number of persons injured,	8	-	7	29	1	1	1	-	1	35	4	1	88
Total number of accidents each month,	174	122	112	147	110	115	88	76	71	89	89	100	1,293
Total number of persons killed in each month,	43	34	32	56	22	26	19	32	40	25	38	21	388
Total number of persons injured in each month,	234	235	113	240	150	112	168	150	103	142	112	174	1,913
Number of accidents causing death to persons in each month,	30	24	18	21	15	18	14	14	14	18	25	17	228
Number of accidents causing injury, but not death,	47	30	29	40	26	29	25	16	16	19	19	31	327
Number of accidents causing no injury to persons,	97	68	65	86	69	65	49	46	41	52	45	52	738
Percentage of all without injury to persons,	56.0	56.0	58.0	58.7	63.0	57.0	56.0	61.0	58.0	58.4	51.0	52.0	57.0

Average number of accidents per day in each month in 1883-84,	5.51	4.07	3.61	4.74	3.79	3.71	2.93	2.53	2.37	2.87	2.87	3.33	-
Average number of persons killed per day in each month,	1.39	1.13	1.03	1.81	0.76	0.84	0.63	1.07	1.33	0.81	1.23	0.70	-
Average number of persons injured per day in each month,	7.55	7.83	3.64	7.87	5.17	3.61	5.60	5.00	3.43	4.58	3.61	5.80	-
Average number of casualties to persons per accident per month:													
Number of persons killed per accident, .	0.247	0.279	0.287	0.381	0.200	0.226	0.216	0.421	0.563	0.281	0.427	0.210	-
Number of persons injured per accident, .	1.345	1.926	1.009	1.633	1.364	0.974	1.909	1.974	1.451	1.595	1.258	1.740	-

Tabular Statement of Train Accidents in the United States during Ten Years.

	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	Total.
Total number of train accidents,	1,179	954	947	779	843	937	1,480	1,332	1,640	1,293	11,384
Total number of persons killed,	227	219	313	200	182	227	435	385	475	388	3,051
Total number of persons injured,	1,052	939	1,230	689	751	946	1,691	1,467	1,798	1,913	12,476
Total number of accidents causing death to persons,	135	154	132	106	100	121	225	224	258	228	1,686
Total number of accidents causing injury, but not death,	225	221	217	143	165	197	320	284	387	327	2,486
Total number causing no injury to persons,	816	608	598	530	578	622	935	824	1,004	738	7,253
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Collisions, rear,	131	146	177	138	172	239	363	388	403	316	2,493
Collisions, head,	97	93	98	79	79	111	161	140	191	146	1,195
Collisions, crossing,	19	13	18	7	12	17	30	26	38	27	207
Collisions, passing,	—	—	—	—	—	—	—	—	1	1	2
Collisions, unexplained,	13	11	4	1	1	—	—	2	—	—	32
Deraillments,	841	642	600	520	532	532	855	740	921	736	6,919
Other accidents,	78	49	50	34	47	38	71	36	86	67	536
Total accidents,	1,179	954	947	779	843	937	1,480	1,332	1,640	1,293	11,384

[C.]

SPECIAL REPORTS ON ACCIDENTS.

FATAL ACCIDENT ON THE BOSTON & ALBANY RAILROAD, JAN. 14, 1884, RESULTING IN THE DEATH OF MR. JOHN P. C. BURPEE.

The death of Mr. Burpee was investigated by the Board, who find that he was a passenger in one of the four sleeping-cars which arrived from New York at 6.25 A.M.; that the cars, after entering the station, were drawn out, in order to be backed in on another track so that those passengers who wished so to do might sleep until a more convenient hour; that notice was distinctly given that this was to be done, and that Mr. Burpee left the train before it had been backed into the station. He then undertook to cross the tracks toward Albany Street, having alighted from the car at the distance of eighteen feet from the next track. An engine with a tender was backing toward the station in order to take out another train, and the tender prevented the engineer from seeing the unfortunate man, who was instantly killed. Two other locomotives passed over the body before his death was ascertained. No misconduct or negligence can be attributed to any employee of the company, nor was there any faulty practice on their part. The cars were on their way to a proper place, where the passengers would be perfectly safe, and they had no occasion to leave at a point so hazardous. The backing of the engine with a tender attached was absolutely necessary. It causes danger to persons in the yard, but the yard of a railroad must always be a place of danger.

By the Board.

THOMAS RUSSELL, *Chairman.*

JANUARY 17, 1884.

FATAL ACCIDENT ON THE BOSTON & ALBANY RAILROAD, JAN. 11, 1884, RESULTING IN THE DEATH OF DAVID B. QUAY.

The death of David B. Quay occurred on January 11, in the yard of the Boston & Albany Railroad, while he was uncoupling freight cars. They belonged to the Boston & Albany Company, and were fastened by link and pin. As Mr. Quay stepped between the sixth and seventh cars to pull the pin, his foot was caught in a frog and he was run over by cars 6 and 5 and instantly killed. His death was due to the want of an automatic coupler and to the use of unblocked frogs.

The same causes of accident and death exist on all the railroads in the State, and this seems a fit occasion to call attention to the danger. The Board can add nothing to what has been already said as to the desirability of guarding the lives and limbs of employees by the use of automatic freight couplers. But the danger arising from the use of frogs unprovided with any safeguard has received less attention in this State. The Commissioner of Michigan says in his last report: "The deadly frog last year killed four and mutilated seventeen other employees, and the last legislature passed a law requiring railroad companies to so 'adjust, fill or block the frogs, switches and guard-rails on their roads as to prevent the feet of employees or other persons from being caught therein.' The law takes effect on the first of January next" (1884).

Learning that the Flint & Pere Marquette Railroad had been the first to comply with this statute, a letter from its superintendent was procured through the courtesy of its president, Hon. Wm. W. Crapo, from which an extract is given. The letter also speaks highly of two different self-couplers used on a portion of the company's freight cars:—

EAST SGINAW, MICH., Jan. 18, 1884.

Hon. THOMAS RUSSELL.

Dear Sir,—In regard to the frog, you say you would like to know just how this blocking is done on our road, and how it works. In answer to this, I will say, that the blocking is done by a strip of hard wood shaped to conform to the web of the rail, and bolted in with carriage bolts in such a manner that it is impossible for a person to get a foot caught and be held by the rails. The blocking that we use is known as the "Hart Patent." Mr. Hart's address is Clinton, Ia. I have no cut or description of this, but will make a rough sketch, showing an end view, as applied to the rails.

Works satisfactorily. * * *

Yours truly,

SANFORD KEELER, *Supt.*

The method above described of guarding frogs is generally preferred by railroad men to the strong spring in use upon some roads, which "gives" under the force of the wheel, but does not yield to the tread of a man. It would be a credit to our railroad companies if, without waiting for a statute, they should make provision for the saving of life and limb such as has been made on the roads of Michigan under the compulsion of law; and the subject is earnestly commended to their attention.

By the Board.

THOMAS RUSSELL, *Chairman.*

JANUARY 21, 1884.

THE DEATH OF FRANK HAYES.

On the evening of May 31, Mr. Hayes, who was riding, according to his custom, on the platform of a Boston & Albany Railroad car, fell from it at the Providence crossing, and died from the effects of a wound on the head. No special cause of the accident is known. This sad death seems to give a fit occasion for calling the attention of all railroad managers in the State to the too general practice of allowing passengers to occupy a dangerous position on the platforms of steam cars. It is true that an iron plate on each car gives notice that this is not allowed. But it is equally true that, while intoxicated persons and young persons are warned away and prevented from remaining, other passengers are habitually allowed to ride in places which are declared by this very notice to be dangerous. Regulations forbidding this practice would, if enforced, save many casualties. We are aware that such rules would cause some discontent. Few personal rights are more tenaciously cherished than the supposed rights of risking limb and life by walking on railroad tracks or by riding on car platforms. One practice is forbidden by law, the other should be prevented by regulation. For it has often been held that it is not only the right but the duty of common carriers to make and enforce all such rules as are necessary for the safety of their passengers. Numerous cases of accident and death show that the enforcement of this rule is necessary.

By the Board.

THOMAS RUSSELL, *Chairman.*

JUNE 5, 1884.

THE DEATH OF L. L. BEAN.

An investigation as to the cause of the death of Mr. Bean, on June 21, on the track of the Old Colony Railroad Company, in their yard at South Framingham, shows that the accident was caused by his getting his foot caught in a frog, while a train of six or seven cars was backing into track No. 7, in order to take and to leave cars. His foot was so tightly wedged in the angle that after he was run over and killed it required the exertions of four men to extricate it.

The accident resulted from his carelessly stepping in between two cars and walking with the train while it was in motion, instead of waiting until it had come to a full stop, seeking to gain a fraction of a minute where haste was of no consequence. There was no fault in the action of any other employee or official of the company.

The accident enforces the views of the Board heretofore set forth as to the necessity of some system of foot-guards. The Old Colony Railroad Company has diligently sought the best method of blocking or securing frogs, switches and guard-rails, and after various experiments had, before this accident, selected and begun to apply a method which is well approved by use, and which seems to the Board to be an excellent device. It is to be regretted that this device had not been applied a little sooner. But it is within the knowledge of the Board that the managers of the road have spared no pains in endeavoring to find the best method. And the experience of other roads justifies them in not taking at once an inferior and unsatisfactory appliance.

There is no cause for censure in regard to delay in adopting a foot-guard. As to the adoption of automatic or safety couplers, the legislature, in the desire to secure the best device, have prudently postponed to a day still distant any demand for action.

JUNE 25, 1884.

COLLISION OF A FITCHBURG FREIGHT TRAIN WITH A MIDDLESEX R. R. STREET CAR, JULY 30, 1884.

On the evening of July 30, a freight train backing down to the wharf of the Elevator and Dock Company struck an open car of the Middlesex (street) Railroad Company, entirely demolishing the rear seats. The passengers, more than twenty in number, escaped without serious injury. An examination of witnesses was held on the

next day, because an early investigation is found most satisfactory. But the Board have delayed a report until they could obtain the ideas both of steam railroad and street railway men as to the best mode of providing against like casualties in future.

As to this accident, a great amount of conflicting testimony was received, but the weight of testimony and the logic of facts show that the gates were not closed by the gateman as promptly as they should have been. If they had been so closed, the collision could not have happened. Whatever doubts may exist as to the action of the driver of the horse car before he found the train upon him, he cannot be censured for urging his horses forward then, and by so doing he may have avoided a fatal result.

The more important question is, what precautions can be taken to prevent future collisions? It is the misfortune of Charlestown to be cut off from Boston proper by an intervening freight yard. Here a great traffic is conducted, which will increase with the prosperity of the line and of the port. It is made more dangerous by the need of backing freight trains to the wharf, so that the usual signals of danger are wanting. It is deeply to be regretted that the cost of an overhead bridge has prevented the only safe and practicable way of avoiding the danger of such a crossing. Whatever is necessary for the security of the great current of travel over the two avenues thus intercepted should and would willingly be done by the Fitchburg Railroad Company. If their gate-tenders were always faithful and alert, no such accident could ever occur. But faithful service cannot always be secured. On the night in question a substitute had taken the place of the regular gate-tender, whose fidelity is universally praised.

The rules of the Middlesex Company, like those of other street railway companies, require a strict observance of the law, viz., that a full stop be made within 100 feet of the crossing. This is now applied on all days, and at all hours of day and night, whether the steam cars seem to be running or not. The first violation of this rule, on this or on any street railway, should insure the dismissal of the driver; and any passenger witnessing such violation of law should report it at once to the managers of the railway. Whenever a serious accident occurs, wholesale charges of former misconduct are made, which cannot be investigated, or proved or disproved. An accusation, promptly made, and followed by due investigation, may save many lives. The rule of the Middlesex Railroad Company, which requires the counting of ten during the full stop, has the advantage of being definite, and is a desirable security. This company, at streets crossed by passenger trains, requires the conductor to go forward and look up and down the track before allowing the car to go

on. Upon most of the railways in Boston and its vicinity, this is required at all such crossings. The practice varies in one respect. Some require the conductor to return to his car before it can proceed. Others oblige him to remain on the track until it has been crossed. There are advantages and dangers attending each practice, and the choice of practice may well be left to the managers of each company, who may also prefer different rules for different crossings.

But the rule of sending out a conductor should be made and enforced at all crossings except those peculiarly dangerous to passengers taking or leaving the cars. And at such crossings a man should be constantly kept by the street railway company to warn drivers of the approach of trains. Regarding the crossing in question as one of peculiar danger, the Board recommends that in future a man should be so stationed by the Middlesex Railroad Company, whose sole duty shall be to give such warning. As to the steam railroad trains, we recommend: 1. No train should back over this crossing without having warning lights placed on the rear car, i.e., on the car which is in advance when reaching this crossing. 2. That at this crossing electric bells be placed which will give warning of the approach of cars or engines both to the gate-keeper and to the employees of the street railway company. And at all crossings where such a precaution is practicable, we suggest its adoption, recognizing, however, the fact that at some crossings, as at that of Dover Street over the Old Colony Railroad, a bell would be useless, because, from the position of that crossing between two freight yards it would ring continuously, and the gates would be always closed.

In the investigation of this matter, the operation of the Union Freight Railroad was incidentally brought in question. The rules for operating that road are all that could be desired, and seem to be well carried out. The rules of some of the street railway companies as to the duties of their drivers and conductors have been imperfect, and such as tended to produce collisions. They have now been so revised as to require the same precautions that are used on approaching other steam railroads. We recommend a rigid enforcement of these rules in future, including full stops by horse cars and the sending out of conductors to the steam railroad track for observation.

For the Board.

THOMAS RUSSELL, *Chairman.*

AUGUST 13, 1884.

COLLISION ON THE HOLYOKE & WESTFIELD RAILROAD,
SEPT. 27, 1884.

A freight train running from Holyoke to Westfield was in part derailed and wrecked at 8.10 P.M., September 26. A passenger train leaving Holyoke for Westfield at 6.45 A.M., on September 27, was allowed, for want of notice and of flagging the wreck, to run into it, and to narrowly escape a serious accident.

1. The cause of this collision was the gross and inexcusable carelessness of Mr. Warren, who was sent to flag the train and to place torpedoes on the track, as required by rule 19 of the company. This he neglected to do. He stated that he went a good distance — twelve telegraph poles — but at the time of the accident he had returned, and was standing by the wreck. There is no pretence that he used the torpedoes which were furnished by the company. In the night and in the foggy morning which followed, these were the proper and only safe signals for the approaching train.

2. The conductor of the freight train ought to have stated distinctly to his brakeman his duty as to guarding the wreck. He assumed that the man would know and do his duty. But experience shows that this is an unsafe assumption. The fact that the conductor went on at once with a portion of his train to Westfield, where he reported, and then to New Haven, is an explanation of his apparent neglect. The further fact that no train was due for ten hours also explains it. But it cannot too often be repeated that extreme diligence is the only safe rule in such cases, and that it is best to err, if at all, on the side of excessive care.

3. The closing of all Holyoke telegraph offices from 8 P.M. to 8 A.M. prevented any telegraphic notice being sent from Westfield or elsewhere. Under these circumstances, the utmost diligence in flagging should have been used. A messenger should have been sent seven miles to Holyoke.

4. The presence and use of the automatic brake probably prevented a serious disaster, and this is another illustration of its value in critical circumstances.

By the Board.

THOMAS RUSSELL, *Chairman.*

OCTOBER 2, 1884.

THE DEATH OF B. A. BROWN.

The death of Benjamin A. Brown, October 4, at Bird Street station on the New York & New England Railroad, resulted from his leaving a local train on the wrong side, and before the train had stopped, while an east-bound express train was passing, by which he was struck. The rules forbid crossing a train at a station, and secure the right of approach to the train first entering "the station block," while the other train is directed to come to a full stop. The engineer of the express train was misled as to the position of the local train, and believed it to be east of the station, and out of the block. But the difficulty of estimating the nearness of a train by its head-light, when it is directly in front, always exists, especially on a dark night like that of October 4. This place is peculiarly dangerous because of the bad curve, which is only 2,000 feet west of the station, and although these two trains have never met precisely at the station before, such a meeting is always liable to occur. Where stations are only half a mile apart, the unavoidable variations in the time of a through train make it impossible to avoid such crossings.

It was in evidence that passengers persist in taking and leaving trains at this and neighboring stations on the wrong side, regardless of the peril and of the frequent efforts of train men to prevent this dangerous practice, such efforts being regarded as insults and invasions of the rights of the people. The legislature has declined to forbid the passing of trains receiving or discharging passengers by trains running at speed, or to act upon the subject. It is, especially at points like this station, the duty of the railroad managers to guard passengers against the fatal results of their own carelessness, and even of wilful recklessness. This can be done to some extent by using platform gates, and more effectively by separating the tracks by a fence. It is recommended that the cars of the local trains on this road be provided with such gates, or that fences be erected between the tracks; and at this and other stations which are peculiarly dangerous by their position and by the practice of taking and leaving trains on the wrong side, a fence is desirable. And the managers of other roads are advised to consider the expediency of adopting like precautions.

By the Board.

THOMAS RUSSELL, *Chairman.*

OCTOBER 11, 1834.

[D:]

GRADE CROSSINGS AND BRIDGES.

ROAD COMMISSIONERS OF FAIRHAVEN, PETITIONERS
FOR LEAVE TO LAY OUT PLEASANT STREET ACROSS
THE OLD COLONY RAILROAD AT GRADE.

The objections of this Board to grade crossings are well known. They are shared by the legislature, which, with a full knowledge of its views, has required the assent of the Board before allowing their creation; and the frequent cases of fatal injury recurring where they have been allowed, strengthen these objections.

To justify the allowance of such a danger, a necessity for this method of crossing must be shown. Here the present necessity supposed to exist is that a few persons could save some distance in travelling to a portion of the town, and especially that a number of children would more easily reach the spacious schoolhouse which is to be erected by the liberality of a native of Fairhaven. In addition to this, it is urged that a large population, including summer residents, will be attracted to a part of the town now sparsely settled. And it is also said that this proposed crossing, until it is built upon, will be far more safe than two of the four streets that now cross the Old Colony road at grade.

But even if this showed such a decided public convenience as to constitute a necessity for a crossing, it does not show the necessity for a grade crossing unless the lay of the land or its occupation or some other cause makes it impossible to have an overhead crossing without inordinate expense or unreasonable inconvenience. In this case this is not shown. On the contrary it appears from the view and from the slight additional testimony, that an overhead crossing can be provided without extravagant cost, and without any great inconvenience. Certainly the petitioners have not sustained the burden of proving necessity by showing that a bridge is impracticable.

And this is the answer to two ingenious arguments advanced by the able counsel for the petitioners. He contended that this case differed from others, where grade crossings have been refused, because

it is rare that a compact town is bisected by a railroad, and he claimed that this made such a crossing necessary. And further it was urged that by tempting travellers away from more dangerous crossings, this would be a means of safety rather than of peril. But the true way to avoid the danger is to have one overhead bridge, so that no one need expose his life by using either of these crossings. And a town cut in two as this is by a railroad track ought to have one such means of safe passage from one side to the other. This is especially the case where a portion of the town is cut off by the railroad from the school-house, which a number of young children must reach and leave at their peril. Certainly the Board has never granted a grade crossing upon the ground that it is to be used largely by children, who, as it is well known, are often reckless and who cannot always be saved from danger even by gates or flagmen.

The Board has no authority in this form of proceeding to order a bridge. But it is our duty to refuse the more dangerous way, unless some controlling demand for it is shown. The objection of one of the witnesses that no power had a right to forbid the people of Fairhaven from extending their streets in whatever direction they choose, is an objection to the law itself. It is enacted that before a street can be extended across a railroad, even under or over it, the county commissioners must adjudicate in its favor; and before it can cross at grade, the consent of two boards of disinterested persons must be obtained. And while this is law the Board is bound in duty to refuse even the unanimous local wish, if some convincing reason is not shown for the more hazardous mode of crossing.

It is an error to suppose that this is only a question between the people and the railroad company. The object of the law is to protect the public, strangers as well as inhabitants of the town, against a well known danger. The "inconvenience" to be avoided is not that of the corporation in its possible liability to suits, but the infinitely greater inconvenience of injury to limb and loss of life, from which such suits might arise.

This view makes it unnecessary to consider the idea that few persons after all will take this way, and those chiefly attracted from worse crossings, especially as that view is inconsistent with the idea that land in the southern part of the town is to be doubled in value by this extension,—an increase that could not result without a great increase of travel.

The argument is sound that the fewness of trains, with their known hours, reduces the amount of danger. But it is hoped that the number of trains, especially in the summer season, may increase with the growth of the place. And the danger at all such points comes from the few irregular trains, rather than from the regular ones. The

Board would be sorry if a desirable public improvement should be defeated or delayed because of the additional expense necessary for carrying it out in a safe manner.

We hope that the town authorities will confer with the railroad managers as to the best method of extending Pleasant Street without crossing the track at a level. And experience warrants us in believing that some reasonable agreement as to the division of expense may be made. We cannot find such a necessity as would warrant us in approving a crossing at grade.

By the Board.

THOMAS RUSSELL, *Chairman.*

JANUARY 2, 1884.

SELECTMEN OF FALMOUTH, PETITIONERS FOR A GRADE CROSSING OF THE OLD COLONY RAILROAD.

The selectmen of Falmouth petition for the consent of the Board to the crossing of the Old Colony Railroad by a way laid out at a level with the road.

The petitioners and respondents have been fully heard, and a view of the premises has been had, and for reasons often set forth, and especially for the reasons given Feb. 7, 1883, in reply to a like application, the Board is compelled to decline to give its consent to the proposed mode of crossing.

By the Board.

THOMAS RUSSELL, *Chairman.*

FEBRUARY 11, 1884.

SELECTMEN OF WESTBOROUGH, PETITIONERS FOR BRIDGE LESS THAN EIGHTEEN FEET HIGH ABOVE TRACK.

The selectmen of Westborough desire to construct a bridge for a town way over the Boston & Albany Railroad, at a height less than eighteen feet above the track. This new crossing is especially desirable because the only existing one in this compact and growing town is on a level with the track, which bisects the main village. It will be used by many school children who now cross without right of way.

The reason for desiring the low bridge is the usual one,—economy in cost and less inconvenience to traffic. And it is urged that as there is an old bridge only sixteen feet high about 600 feet from the proposed one, it will not practically increase the danger to brakemen.

This argument is supposed to be supported by the action of this Board, permitting the construction of such bridges over the same railroad within the city of Boston, at a period not very remote. But those cases differ from this, because there was a series of low bridges, nine or ten in number, erected before the present law, and bearing such relations to costly buildings on Washington Street and other important avenues, that they were regarded as permanent. Under these circumstances, it seemed to our predecessors, that the peril would not be increased by adding one to a succession of low bridges standing very near to each other. Indeed, it may be urged, that one exception to the general system of Boston bridges, might lead some man into danger, if he should mistake the locality of the one bridge under which he could safely stand upright.

This argument does not apply in this case. Here is no long succession of neighboring bridges. We cannot authorize a second cause of accident simply because one already exists. On the contrary, if on this account we should grant the petition, we should not only be authorizing a new danger, but sanctioning the continuance of an old one. It is almost certain that the present bridge must soon be reconstructed, when an additional track is laid; and this new bridge, unless for good reasons to the contrary, must be eighteen feet above the track. We ought not to authorize a dangerous structure now, upon an argument that will soon compel a second one.

The petitioners are right in supposing that this is not a question between the town and the railroad company. The consent or opposition of the corporation is of little consequence. It is a question of human life, and the policy of the law is to protect life by enforcing the statute provision. Some strong reason must be given for establishing an exception to the general rule. No such reason has been given in this case, for permitting a structure which would probably cause the loss of at least one life in the course of a generation. Regretting the increased cost of this desirable improvement, and the additional inconvenience caused by two feet of ascent for travellers, the Board does not feel justified in granting the petition.

By the Board.

THOMAS RUSSELL, *Chairman*.

MARCH 3, 1884.

BOSTON & MAINE RAILROAD COMPANY, PETITIONERS
FOR GRADE CROSSING OF CANAL STREET IN LAW-
RENCE.

The proposed crossing is by a short branch to be used for freight only, and it is desired to connect certain factories with the main line of the railroad. The city government assents to the request upon condition:— (1) That the rate of speed shall never exceed four miles. (2) That no engines or cars shall be run over the crossing for ten minutes before or after the ringing of the factory bells, or during what is called “bell time.” (3) The paving at this intersection of the railroad and street is to be done by the railroad company under the direction of the city government. (4) The railroad company shall erect gates at the crossing, and provide gate-tenders at the time of the passing of trains or engines. And the Boston & Maine Railroad assents and agrees to all these conditions.

The question whether Canal Street (so called) is legally a street is now pending in court. But the Board, in deciding the question before it, has acted on the assumption that it is a legally laid out street.

The crossing in question takes the place of one which has existed for many years, and which is to be discontinued as soon as this is fitted for use. The conditions assented to by the railroad company greatly reduce the danger of a grade crossing. But the reason that prevails with the Board, and makes this case an exception to the general rule, forbidding grade crossings in populous places, is, that although this way may be nominally a street, it is practically dedicated to other uses, and constitutes part of a freight yard used in connection with the factories to which alone it owes its existence. The Boston & Lowell Railroad has a track laid longitudinally through Canal Street. This was lawfully and properly permitted by the city authorities who have exclusive jurisdiction in the matter. And we think that such a dedication of this way to business takes it out of the rule applying to ordinary streets, and gives notice to travellers that it is devoted to manufacturing business, and to the traffic incident to such business. Similar applications have been granted in this and other manufacturing cities without being regarded as infringements of the general rule protecting the public from the perils of grade crossings. These views were considered by the Board when the question of exigency for this branch was decided. For any crossing except at a level with the street is absolutely impossible.

Of the four conditions desired by the city all are agreed to by the petitioners; and the fourth, which alone is under jurisdiction of this Board, is established by an order of this date. The petition is granted and the Board assents to the proposed crossing at grade.

The joint petition of the Boston & Lowell Railroad Corporation and the Boston & Maine Railroad, for leave to cross the tracks, each of the other, in Canal Street in Lawrence, was filed at the hearing in the above case at the suggestion of the Board, to save any question of law as to the legality of such crossing, and without prejudice to any existing rights of either corporation, and the Board consents to such crossing at grade.

By the Board.

THOMAS RUSSELL, *Chairman*.

APRIL 17, 1884.

BOSTON & LOWELL RAILROAD CORPORATION, PETITIONERS FOR GRADE CROSSING IN LAWRENCE.

The city of Lawrence assents to such crossing upon four conditions, viz.: — (1) That the rate of speed shall never exceed four miles an hour. (2) That no engines or cars shall be run over the crossing for ten minutes before or after the ringing of the factory bells, or during what is called "bell-time." (3) The paving at the intersection of the railroad and street is to be done by the railroad company, under the direction of the city government. (4) The railroad company shall erect gates at the crossing and provide gate-tenders at the time of the passing of trains or engines. And the petitioners assent and agree to these conditions.

Mainly for reasons given for assenting to the petition of the Boston & Maine Railroad for a like crossing over Canal Street, the consent of the Board is given for this grade crossing.

By the Board.

THOMAS RUSSELL, *Chairman*.

APRIL 17, 1885.

MEMORANDUM AS TO CERTAIN GRADE CROSSINGS IN HOLYOKE.

Upon the petition of the Connecticut River Railroad Company for a certificate that public convenience and necessity require the construction of a branch road in the city of Holyoke from a point on their main line about four hundred feet north of Willimansett Bridge, thence northerly and adjoining the proposed extension of the second level canal to a point near Syms and Dudley's Paper Mill, it appeared from

the certificate and testimony of the mayor and from other testimony that the road will not cross any public street or public way. And it was held that the Board had no jurisdiction as to its mode of crossing any other way, and that there was no need of obtaining the consent of the Board in order to cross any existing way at a level.

WM. A. CRAFTS, *Clerk*.

JUNE 30, 1885.

SELECTMEN OF BELLINGHAM, PETITIONERS FOR GATES
AT CROSSINGS OF THE NEW YORK & NEW ENGLAND RAILROAD.

The Board declines to grant the petition of the selectmen for an order to place flagmen at the crossings of Centre and Railroad streets.

1. Because the travel thereon does not warrant such an order.

2. Because the true way to obviate the danger of these crossings is by bridging Centre Street and discontinuing part of Railroad Street. And the railroad company offers to bear its full share of the cost of these changes.

Attest,

WM. A. CRAFTS, *Clerk*.

AUGUST 13, 1884.

PETITION FOR GATES OR FLAGMEN AT GRADE CROSSINGS IN ANDOVER.

The petition of the selectmen of Andover for an order that the Boston & Lowell Railroad Corporation place gates or flagmen at the crossing by Haggett's Pond Station and at Burt's and Dane's crossings, was heard at Andover, on September 10, by the full Board.

Considering the limited number of travellers at ordinary times, the Board declines to pass the order requested. But the Board recommends:—(1) That a flagman be stationed at Haggett's Pond crossing during the season of picnics, when there is a large amount of travel. (2) That measures be taken, as they can be with small trouble and expense, to diminish the danger at Burt's and Dane's crossings by the removal of the trees which obstruct the view of travellers. (3) The representatives of the railroad company have offered to share the cost of rendering one of these crossings absolutely safe by carrying

the highway over their railroad. We therefore recommend that the company try to make an arrangement with the town of Andover, by which this shall be effected with an equitable division of expense. And if this fails, we would suggest that the company consider the propriety of applying to the county commissioners under the statute for a separation of grades.

By the Board.

THOMAS RUSSELL, *Chairman.*

SEPTEMBER 10, 1885.

CITY OF BOSTON, PETITIONER FOR LEAVE TO CONSTRUCT A FOOTBRIDGE OVER THE EASTERN RAILROAD LESS THAN EIGHTEEN FEET ABOVE THE TRACK.

The city of Boston asks leave to erect a footbridge at an elevation of sixteen feet over the tracks of the Eastern Railroad, at its intersection with Sumner Street, in East Boston. The tracks are largely used by the freight trains of the Boston & Albany as well as those of the Eastern Railroad Company.

A bridge at this point is very desirable if it can legally be constructed, as to which no question is raised in this case. But no sufficient reason is given for building it less than the standard height of eighteen feet. The school children for whose use it is chiefly designed are not a class who will greatly care for two feet more or less of elevation. It may be presumed also that they will be directed to use the bridge, and that they will obey. The increased cost is not worthy of consideration in comparison with the protection to life given by a higher bridge, nor does it affect the views of the city authorities.

The statute fixes eighteen feet as the proper elevation. The power to reduce this in any given case is only to be exercised for good cause shown. Such a cause exists where there is a series of low bridges which we have no authority to raise. In such a case the insertion of one higher bridge in the series actually increases the danger of confusing and misleading the men. It is better for them to understand that all the bridges are low and dangerous.

In this case no such reason exists for an exception. The nearest overhead bridge is more than a mile from Sumner Street. All East Boston intervenes between the existing bridges and the proposed one. Moreover, many of the brakemen who will pass under this structure, pass under no other, being wholly engaged in switching.

The tracks in question would be peculiarly dangerous to brakemen if a low bridge were allowed, for when this spot is reached by cars arriving, or occupied for switching, men are always on the cars. If a low bridge were allowed here, a precedent would be given for permitting such construction everywhere, and the statute would be nullified.

It is true that more people might use a sixteen-foot bridge. But the risk run by declining to use it, is a voluntary one, incurred to avoid a little bodily exertion. The risk against which the law seeks to guard train-men is one that must sometimes be incurred in performing their duty.

The Board declines to assent to the erection of a bridge with less than eighteen feet of headway over the railroad tracks.

By the Board.

THOMAS RUSSELL, *Chairman*.

SEPTEMBER 20, 1884.

SELECTMEN OF FRAMINGHAM, PETITIONERS FOR A
GRADE CROSSING OF THE BOSTON & ALBANY RAIL-
ROAD.

It is objected that the Board has no jurisdiction because the town has adopted the provisions of law as to road commissioners, and therefore they, and not the selectmen, ought to have signed the petition asking leave to lay out a street over the railroad, and at a level with it. Sect. 75 of chap. 27, Public Statutes, is as follows: — “Said road commissioners, in matters concerning streets, ways, bridges, monuments at the termini and angles of roads, guide posts, sidewalks, shade trees, sewers and drains, shall exclusively have the powers and be subject to the duties, liabilities and penalties of selectmen and surveyors of highways, and shall have all the powers and privileges conferred upon selectmen in sect. 17 of chap. 53 in relation to moving buildings in public streets and highways.” This full enumeration, as well as the use of the word “exclusively,” leaves no doubt that the legislature intended to give sole jurisdiction in all matters concerning ways to road commissioners, where the town has voted to elect such a board. When the word “selectmen” is used in statutes relative to ways, it refers to those towns (the great majority) that have not adopted the statute provisions as to road commis-

sioners. It means the "selectmen or road commissioners," and this is expressed in other portions of the statutes. If a petition came before us signed by the road commissioners, with a remonstrance by the selectmen, we should have no doubt of our authority to hear it. And it seems clear that we have no authority to hear this petition. The objection is said to be technical. So it would be if the petition had come from the school committee or board of health, but no one in such case would doubt that it was our duty to dismiss it for want of jurisdiction, as we must do with this petition without regard to the merits.

By the Board.

THOMAS RUSSELL, *Chairman*.

OCTOBER 13, 1884.

BOSTON & LOWELL RAILROAD CORPORATION, PETITIONERS FOR GRADE CROSSINGS IN BEDFORD AND BILLERICA.

On the petition of the Boston & Lowell Railroad Corporation. Voted, that the consent of the Board is hereby given for the construction of a branch of the Boston & Lowell Railroad across certain town ways, and other ways in Bedford and Billerica at the same level therewith as adjudged necessary by the county commissioners of Middlesex County.

MEMORANDUM.

The Board never permits a level crossing without regret. In this case the regret is diminished by the character of the crossings, which are as little dangerous as such things ever can be, and by the fact that the travel over the highways is not great, nor is the traffic on the railroad likely to be large for some time. The prevailing considerations, however, are that the grade crossings now permitted are substantially the same that were long since allowed on the Bedford & Billerica Railroad, and that they are now asked for in a somewhat less dangerous form. In addition to this it is plain that if level crossings are refused, the railroad will not be constructed. It is not a question whether it shall be built with grade crossings or without, but whether the towns and the people who have once paid dearly for a railroad,

shall have one or not. The petition is granted, not to save the corporation expense, but to secure to the public accommodation which they greatly desire and need. It is unnecessary to add that the granting of this request will not prevent this or any other Board from acting freely on the question of separating grades, if it should ever arise, when travel and traffic have increased. Still less would it embarrass any tribunal which should be called upon to direct the placing of a gate or a flagman at any crossing that should appear to be dangerous.

WM. A. CRAFTS, *Clerk*.

OCTOBER 20, 1884.

[E.]

APPLICATIONS FOR PASSENGER AND EXPRESS FACILITIES.

MERRILL & COMPANY, PETITIONERS FOR EXPRESS FACILITIES ON THE BOSTON & LOWELL RAILROAD.

This petition seeks additional facilities upon the passenger trains of the respondents. At present the petitioners have accommodations only between Boston and Wilton, by the 7.45 A. M. train from Wilton over the Wilton Railroad, the Nashua & Lowell, the North Acton & Boston Railroad and the Lexington Branch, returning by the same route at 1.35 P. M. The amount paid is \$4,000.

The United States and Canada Express has the right to run over the main line and branches, doing business at all points, for \$30,200 a year. The petitioners asked privileges on certain specified trains. The respondents refused on account of this prior contract with the United States and Canada Company, "unless you are willing to cover all their territory at the same prices."

The Commissioners of New Hampshire were present, as the same question is pending before them, and it was desirable to save the expense of a second hearing. It is unnecessary to say that the matters presented to this Board are decided by this Board and by the laws of this State. The question raised as to what would happen if the two Boards acting under different laws, and perhaps taking different views, should give different advice, must be left until the case arises. Of course no decision is given or asked as to the business done between any two towns in New Hampshire.

1. The question of jurisdiction over a matter relating to interstate commerce was raised. In answer, it may be said, briefly: (1) Until Congress has legislated upon the subject, and until the case of *Peik v. Chicago & Northwestern Railway* (94 U. S. 194) is overruled, the mere fact of transit from one State to another does not deprive State tribunals of jurisdiction. And it is not even necessary to rely upon

the rule so often followed by judicial tribunals, "When in doubt, take jurisdiction." (2) In this case the Board is only asked to recommend action to a company incorporated by this State and having its chief place of business and terminus here. When such a recommendation has been made and neglected, then it will be time to ask whether there is any constitutional power to enforce it. In dealing with the Boston & Lowell Railroad Company, the Board has never had occasion to consider this question nor any question of privilege peculiar to its charter.

2. In acting upon this petition we have not regarded chap. 225 of 1882, which relates to "freight" and "freight business" alone, and which, as the parties admit, does not include express traffic, nor is it necessary to inquire whether any part of chap. 73, Public Statutes, covers such a case. The application depends upon sect. 188 of chap. 112: "Every railroad corporation shall give to all persons or companies reasonable and equal terms, facilities and accommodations for the transportation of themselves, their agents and servants, and of any merchandise and other property upon its railroad, and for the use of its depot and other buildings and grounds." The word "equal" has been practically eliminated from this statute by the Supreme Court (128 Mass. 326). As construed it secures reasonable terms, facilities and accommodations for all parties entitled to the transportation of merchandise over railroads.

3. It seems that in Massachusetts every railroad company may refuse to permit any express company to use its trains. This has been decided by the Supreme Court. And the Board, as formerly constituted, has more than once urged upon railroad companies as a duty the assumption of all express business.

4. But if a railroad company contracts to transport one express company, then it holds itself out as a common carrier for persons engaged in that kind of traffic.

In other words, railroad companies in this State can keep out of the business of transporting expressmen, but if they enter upon it they cannot refuse any responsible applicant. The great jurist, Chief Justice Doe of New Hampshire, says: "He may be a common carrier of one kind of property and not of another; but as to the goods of which he is a common carrier, he cannot discriminate unreasonably against any individual in the performance of the public duty which he assumed when he engaged in the occupation of carrying for all." (*McDuffee v. R. R.*, 52 N. H., p. 448.)

"A railroad corporation carrying one expressman, and enabling him to do all the express business on the line of their road, do hold themselves out as common carriers of expresses; and when they unreasonably refuse, directly or indirectly, to carry any more public servants

of that class, they perform this duty with illegal partiality" (p. 454). While railroad companies carry on the express business they are subject to State supervision, which may be exercised to prevent extortion and other evils of monopoly. If they admit an express company to their trains they cannot give it such exclusive privileges as constitute a monopoly. It is not necessary to discuss this point at length. For the respondents admit that if the railroad corporation receives one express on its trains, it is bound to give the same facilities on the same terms to any other responsible applicant. This admits the principle, although we think there is a mistake in their application of it.

It is contended that while the same contract must be given to the second applicant and to all that come, it is not necessary to give a part of the contract, or any other than the same terms already given. And it was plausibly argued that to demand anything less than the terms of the original agreement was to demand unequal and discriminating terms.

But this reasoning loses sight of the law as expounded by the court, which compels the company to give reasonable terms to all. The respondents dwell upon a literal offer of technical "equality," which has been construed out of the law; and they forget the requirement of reasonable terms which remains.

The question is this: When a firm desires to do business with four towns for a moderate sum, is it reasonable to demand that they shall extend their traffic to all points on the Boston & Lowell road and its branches, and pay over \$30,000 for the privilege? The right is to have reasonable terms. The terms demanded are unreasonable. The price is in itself unreasonable. If \$30,200 is a fair price for an exclusive right, it is an excessive price for a right shared with another company. And it is unreasonable to impose as terms upon a firm wishing to do a limited business the requirement that they shall undertake a business wholly different in extent, which they do not desire, and which they may not have means to carry on. In short, the proposal is an ingenious evasion of the law, but it is no less an evasion.

It is said that this will lead to two kinds of inconvenience — difficulty to the railroad company from the multiplicity of expresses and the number of baggage cars, and evil to the community from reckless competition, ending in consolidation and in higher rates. To these suggestions there are several answers: (1) The legislature when they re-enacted the common law, requiring carriers by rail to give transportation to all, and reasonable terms to all, probably foresaw possible evils, but they deemed monopoly a greater evil than any that was likely to result from competition. They also hoped that common prudence and common sense would check such a multiplication of expresses as would greatly encumber and endanger the operation of

trains; and they have believed that whatever might be the temporary losses to competing express lines, the community would, on the whole, be more cheaply and more liberally served than by a more restricted policy. (2) In theory, our view may result in too many expresses on any route. But in theory the respondents' ideas will cause wider competition and greater confusion. The Board holds that a contract for an express over a whole line opens it for local expresses. The respondents contend that each new applicant must take the whole line, and compete for the whole business.

They expressly admit that the right of the fiftieth is as good as that of the second. Thus in theory the respondents' view leads to far more inconvenience than ours. In practice there will be probably much less in either case than is imagined. Finally, on this point, if the law requires the action asked, it is to be had without regard to consequences.

Even if we did not take this view of the law we should be strongly inclined to think that upon the petition of a second express company and of a large portion of the people in any Massachusetts town, it would be our duty to recommend to the railroad corporation that it should allow the express company to furnish the community with the accommodation which it desired. But it is not necessary to consider this point, nor to inquire how it is affected by the fact, that the petitioners in aid are all from New Hampshire.

Acting under the statute the Board recommends to the Boston & Lowell Railroad Corporation, to comply with the request of Messrs. Merrill & Company, by granting them substantially the facilities asked upon the payment of a reasonable price for the service performed.

By the Board.

THOMAS RUSSELL, *Chairman*.

FEBRUARY 7, 1884.

NATHANIEL C. SMITH, PETITIONER FOR EXPRESS
FACILITIES ON THE OLD COLONY RAILROAD.

The petitioner desires to carry on the express business between Boston and New Bedford, including way stations, and complains that the respondents refuse to give him reasonable terms. A petition in aid was presented, signed by many business men in New Bedford and supported by their testimony. The express business on this line is now done by the New York and Boston Despatch Express Company. Payment was made according to tariff weight until February 23, 1884,

when, pending Mr. Smith's application, contract was made for the monthly payment of \$1,000 for a limited weight, with an additional sum for extra amounts. These last named terms were offered to Mr. Smith and declined. The managers of the Old Colony Railroad Company now propose to assume the business themselves. A committee has been appointed with power to arrange for this branch of traffic; and from April 1 the express business between Boston and New Bedford will be conducted by the corporation.

The Board, in granting the petition of *Merrill v. Boston and Lowell Railroad Company*, has recently decided: (1) That a railroad company need not allow any expresses on its line. (2) That if it allows one it must, under our statutes, accept all responsible applicants. (3) That it must grant them reasonable terms. (4) That to demand of a second comer for a contingent portion of the business the full amount which had been paid by the first comer when he had the whole, was, of itself, *prima facie*, unreasonable. (5) It was not necessary then, nor is it now, to say what terms would be reasonable. That question depends upon the circumstances of each case. We only say, to avoid misapprehension, that the Board has never intimated that reasonable rates would necessarily be in exact proportion to the amount of business done by each expressman.

The only question in this case is whether, by permitting expresses on other parts of its road, the Old Colony Railroad Company loses its right to conduct this business between Boston and New Bedford. Our predecessors on this Board would have stated the question differently: "Whether, by neglecting their duty upon other routes, the corporation is exempt from its duty to the people living upon this route." For in their first, second and third reports they declare that the assumption of the express business by railroad companies is "a subject which they have very much at heart," a duty "very essential to the increasing development of Massachusetts," and one which if necessary should be enforced by compulsory legislation. Two points seem clear: (1) That the railroad companies with their facilities and their staff of employees can do this business in the cheapest and most efficient manner. (2) That they would be, as expressmen are not, directly subject to advice and control if they fail to give proper facilities and terms. Nor are we left in doubt as to the opinion of our predecessors respecting the performance of this work upon one portion of a railroad. In the report for 1872, pp. 22, 23, the Board express their satisfaction that the experiment is to be tried "on that portion of the Boston & Albany road known as the Worcester Division," and thank the State directors by whose exertions this action was secured. The route to New Bedford is more clearly a distinct route with a positive terminus than the part of the Boston & Al-

bany extending to Worcester. The Board would need strong reasons before they condemned as illegal a policy which their predecessors urged upon all railroad companies, and commended when it had been adopted in part by one.

No such reasons have been given. The decision in *Sargent v. Boston and Lowell Railroad Company*, 115 Mass. 416, however it may conflict with opinions held elsewhere, is law in Massachusetts, and is sustained by the soundest views of railroad policy. No intimation can be drawn from it that a company which allows private expresses on one line cannot do this business for itself on a distinct route. The evil of monopoly is checked in the case of private expresses by the cumbrous and annoying method of allowing an indefinite number of such expresses on the same line. When the business is assumed by the railroad company it is checked by the simpler and more effectual means of direct supervision.

The motive of the Old Colony managers is frankly avowed. They are satisfied to have one express company, but they recognize the law which compels them to admit as many more as may apply. They fear confusion and delay of trains with consequent discomfort to their customers; they see that it will probably be necessary to have another baggage car; and they prefer to do the business rather than subject themselves and the public to annoyance. These are not bad motives, but proper ones; and whatever their motives are they are only acting on a legal right.

The matter of discrimination between different places was mentioned by counsel. No such question is now before us. If it is ever raised by petitioners representing an aggrieved place, the remedy would be, not by calling on the railroad company to give up its express business at New Bedford, but by recommending it to assume that business at the petitioning place, so that the place aggrieved may share the presumed advantages secured by this method.

It need only be added that the Old Colony Railroad Company, in entering upon this branch of traffic, is expected to adopt such rates and to furnish such service as will prevent all well-founded complaint, and if possible such as will prevent all complaints whatever.

For the Board.

THOMAS RUSSELL, *Chairman.*

MARCH 17, 1884.

SELECTMEN OF AMHERST AND BELCHERTOWN, COMPLAINANTS *v.* NEW LONDON NORTHERN RAILROAD COMPANY FOR WANT OF REASONABLE FACILITIES.

The selectmen and many inhabitants of these towns complain that the company fails to give reasonable facilities for travel, and especially that it has discontinued the early train running south and making connections for Boston, Springfield and other important places. The hearing was at Amherst, where the case was fully and ably presented for business men, professors, students and others. It is a matter of regret that the Central Vermont trustees, who operate this road, could not have been present, for it is our belief that these experienced railroad managers would have appreciated the needs of this community, and would by prompt action have forestalled a report by the Board.

The first train now leaving for the south starts at 12.20 P. M., connecting with a train due in Boston at 4.30 P. M., and the first train north, after vexatious waiting, only enables passengers to reach Boston at 3 P. M., so that a simple business errand at the metropolis consumes two days. The evening return passage is made by a freight train from Palmer, due at 9, but often as late as 10 P. M. The business connections of Amherst are at the south; and as a specimen of inconvenience, we were told of the necessity of leaving a day in advance in order to fulfil an engagement at Ware, at any time before afternoon. A like trouble exists with all who have business at the shire town; and connection with New York is, also, made difficult. Probably there is no instance in Massachusetts of a town with the population and business of Amherst subjected to like inconveniences. The effect upon business must be serious. The presence of a large body of students, who with their friends furnish much traffic to the railroad, strengthens the demand for better accommodations. The wants of Belchertown are of like nature with those of Amherst; and in summer, especially, facilities are needed for numerous visitors, who wish to enjoy the advantage of its high land and of its healthful air.

The only answer which can be made to this, is the fact that the road is unprofitable and that the abandoned train was especially so.

But it is hardly necessary to repeat what has so often been said, that railroad companies are chartered not for profit to stockholders only, but for the benefit of the public; that by statute as well as in justice they are bound to render reasonable accommodation in return for their franchise, and that neither in law nor in wise railroad policy can the discontinuance of a train, a stop or a station be justified solely by the fact that it is not of itself a direct source of gain.

As our predecessors have said, "where a corporation is not actually bankrupt so its assets are not its own property but that of its creditors, it is bound to afford reasonable public accommodations, whether they are directly remunerative or not. It takes its franchise as a whole, and cannot accept its benefits and decline its burdens." And even when a railroad company is insolvent, so long as it continues in operation, it owes a debt to the public as well as to its bondholders, and within due limits the public have the first lien on its assets.

These general truths are especially applicable to this corporation, in its relations to a community who subscribed largely to its stock with a single view to accommodation and without desire or hope of dividends.

Again, the expediency of running any one train is to be judged of, not only by its direct earnings, but by considering its effects upon the general prosperity of the place. And this idea is well illustrated here. For the freight receipts at Amherst are very large; and those receipts depend upon manufacturing industries, and those industries can only be maintained and extended by just such facilities as the petitioners seek.

And further, while the petitioners must share to a fair extent the cost of the whole road, it is not just to charge them with their full proportion of an extended line and of through trains designed for a traffic which has not yet been obtained. And it would be peculiarly unfair to hold them accountable for the losses of a through train which is not needed, when they only ask for a local train which is needed. No good reason appears why the 2.30 P. M. train should not run from Palmer to Amherst, returning at or about 7 A. M. Amherst is not wholly without the necessary facilities for housing such a train, and the additional expense would not be heavy. It will probably be found desirable in the interests of business men to make the hour of leaving Palmer late enough to connect with the afternoon trains from Boston and New York. This, however, is a matter of detail to be arranged after consultation with the customers of the road. But the Board has no hesitation in recommending to the managers of this railroad that they promptly place upon it an early morning passenger train running from Amherst to Palmer, and an evening passenger train from Palmer to Amherst.

Another matter was introduced at the hearing, although not embraced in the petition. It was said that for good considerations it was agreed to establish a flag station at South Amherst, and it is not denied that for a long period — twenty or twenty-five years — trains other than express did stop there. The station building has been burned, and trains have ceased to stop. This seems to be in direct violation of sect. 156, chap. 112, Public Statutes, forbidding the with-

drawal of station facilities after five years' use. It is probable that this is the result of inadvertence as to the fact, or of misapprehension of the law which applies to this portion of the respondent's line. The Board recommends that orders be given at once for stopping a reasonable number of trains at this place by flag or otherwise, and that proper notice be given for the information of the public. It is also recommended that shelter be furnished for passengers taking and leaving trains.

By the Board.

THOMAS RUSSELL, *Chairman*.

APRIL 23, 1884.

SELECTMEN OF HULL, COMPLAINANTS, *v.* NANTASKET BEACH RAILROAD CO. AND THE TRUSTEE IN POSSESSION.

The petitioners once more complain that the managers of the road have discontinued its operation — on Sept. 15 — and ask for a recommendation that they furnish a reasonable number of trains throughout the year.

The reasons for giving such a recommendation and the limitation upon the power of enforcing it, have been heretofore fully considered by the Board. (14th Annual Report, page 145.)

The strength of the petitioners' case lies in the principle laid down by Chief Justice Gray (13 Allen, 105, 106): "The chief characteristics of a railroad corporation under the laws of this State are, that it is created mainly for the public benefit, and only incidentally for its own profit." And the right to call upon such corporation for services not always profitable to themselves lies in the fact that the privilege of taking land without the owners' consent is given to them by the supreme legislative authority. The right of invading property against the people's will, sometimes only theoretical, was practically exercised in this case, for the town authorities vigorously opposed the construction of a railroad and refused a route, which was only granted by this Board, because the law as it then existed compelled them to grant it. The people are not inconsistent in opposing the construction of a road and now demanding a share of its conveniences, since they are by law compelled to submit it to its inconveniences. An individual who opposes the construction of a road through his estate is not regarded as inconsistent because he demands payment for his land after it is taken. The people of Hull

only ask payment for the franchise by which their town was occupied, as they think, to their injury.

The Board on a former application declined to recommend the costly maintenance of regular trains. Their decision closed as follows: "The Commissioners regret that the needs of the people of Hull cannot be supplied by the operation of the railroad in winter without disproportionate expense. They had hoped that by the use of an engine and car combined the expense might be so reduced as to render the operation of the road feasible; and the decision on the petition has been delayed with a view to inquiries upon this. Such a car would cost only \$4,000 (less than \$2,000 is the present estimate), and could be run at such a reduction of cost as to employees and fuel, as to make the operating expenses only about \$1,500 for five months. Unfortunately no such car can be obtained for use at this season. Before another winter the managers will have the opportunity to procure one; and they will be expected to provide for the reasonable wants of the people of Hull in this or some other way."

When the next winter came and the selectmen again applied to the Board, it was found that an injunction had been issued by the Supreme Court, on the application of land owners whose damages were not paid, and that the managers were forbidden to operate the road at all. Thus the legal claims of one class made it impossible to enforce the equitable claims of another class.

It seems to the Board reasonable that some accommodation should be furnished to the inhabitants of this town throughout the year, especially as they are now deprived of their former facilities. The company "takes its franchise as a whole, and cannot accept its benefits and decline its burdens." As we have had occasion to say before, "even when a railroad company is insolvent, so long as it continues in operation it owes a debt to the public as well as to its bondholders, and within due limits the public have the first lien on its assets."

There is, indeed, a limit even to legislative power in compelling facilities for the travelling public. "No power can prevent stockholders from transferring their shares, and no legislative power can enable men who have no money to operate an unprofitable road." But this limit has not been reached. The present holders of this property can so use it as to furnish reasonable accommodation to the public. While they choose to hold it for their own purposes and to operate it for part of the year in their own way, they ought to give the reasonable and moderate facilities which the community desire during the remainder of the year. When they cannot do this, or do not desire to do it, they should give up the franchise, relinquishing its benefits when they cease to bear its burdens.

It is said as a reason for refusing this petition that the people of

Hull do not largely use the railroad in the summer, generally preferring conveyance by steamboat. But they are under no obligation to use what they regard as the less comfortable and convenient mode of transportation. The fact that steamboats run half the year was one reason for their opposition to a railroad. The duty of furnishing reasonable conveyance to the public is not founded upon the custom which they give to the railroad. It is the price to be paid for the franchise conferred upon the corporation.

We adjudge it to be reasonable that a combination engine and car be run at least once a day each way over this route, with fares greater than those now paid but not exorbitant, and we recommend that the managers of the road promptly furnish such facilities or their equivalent.

By the Board.

THOMAS RUSSELL, *Chairman.*

SEPTEMBER 16, 1884.

SELECTMEN OF HULL, COMPLAINANTS, v. NANTASKET BEACH RAILROAD CO. FOR NON-COMPLIANCE WITH THE RECOMMENDATION OF THE BOARD.

The selectmen and other citizens of Hull renew their complaint that the railroad company does not furnish reasonable accommodation. On their former petition the Board decided that it was the duty of the company to run a daily train, not as a source of profit, but because such accommodation was a reasonable price to be paid for the franchise, and that it was the more reasonable for the people of Hull to demand this, because the road had been forced upon them against their will and to their injury. The Board therefore recommended a daily train "or its equivalent." In response to this recommendation the managers of the railroad propose to run a "barge" which will, by connecting with the Old Colony Railroad, enable the people of Hull to reach Boston at 2.30 P. M. on one day and to leave Boston for Hull at 7.35 A. M. on their return. To this the people object, protesting that any conveyance by barges would be inconvenient and unsatisfactory, but that the proposed line is utterly useless and in no sense an equivalent for a proper morning and evening train. Reaching Boston in the afternoon and leaving before business hours in the morning, this mode of conveyance would require parts of three days for the transaction of any substantial business in the city. As a consequence it would be very little used, for a private conveyance would not only be more expeditious, but practically cheaper. They de-

nounce such an "equivalent" for railroad facilities as a mockery, and the Board agrees with them in their estimate of its advantages. It was hoped that the managers would furnish railroad facilities at a cost not ruinous, or failing to do this that steamboat accommodations might be supplied, which would be, on the whole, a reasonable substitute. And at least a line of barges should have been offered which would fairly take the place of trains. But no such offer has been made, and the Board can only renew its recommendation that as the road is no longer protected by an injunction, and as its managers still operate it at their pleasure, they should do justice to the community whose territory they have invaded, by furnishing them all the year with at least one convenient train running each way on every secular day of the week.

For the Board.

THOMAS RUSSELL, *Chairman*.

OCTOBER 31, 1884.

PETITION FOR STOPPING A TRAIN AT WILLOW AVENUE IN SOMERVILLE.

Certain petitioners of Somerville ask that the train leaving Boston at 6.10 P.M. may stop at Willow Avenue, which is on the Lexington Branch of the Boston & Lowell Railroad. Thirteen outward and thirteen inward trains, carrying an average of four passengers, now stop here, including trains leaving Boston at 5.20, 6.25 and 7.05 P.M. The hardship to passengers is that they either have to wait fifteen minutes in Boston, or that they must get out at Highland Station and walk about thirteen hundred feet.

The chief objection to the proposed stop is that the engine, after taking this train to Arlington, is obliged to reverse and return to Boston, this being a single-track road. Another stop, consuming three minutes, would make this difficult or impossible.

In addition to this, it was shown that the railroad company had proposed to discontinue Willow Avenue and Somerville Highlands Station, and to construct, at a point midway between them, a convenient station with good approaches and with stops for all trains. This apparently excellent project, after once receiving favor from the city, was defeated by opposition from some residents at Willow Avenue. The Board, under all the circumstances, does not think it reasonable to recommend the proposed stop.

By the Board.

THOMAS RUSSELL, *Chairman*.

APRIL 24, 1884.

SELECTMEN OF ARLINGTON, PETITIONERS FOR BETTER
ACCOMMODATIONS AT LAKE STREET.

The selectmen of Arlington ask a recommendation to the Boston & Lowell Railroad Corporation, that better accommodations be furnished as to trains and station at Lake Street.

1. No lack of trains was shown. Thirty trains now stop each day at this point to accommodate fifty-five passengers, an average of one and five-sixths passengers to a train, and the hours are well chosen for their use.

2. The station is small, badly situated and lacking in needed conveniences. This is not denied by the railroad managers, who only plead difficulty as to a site, and the existence of other pressing duties, as a reason for neglecting this. We recommend that land shall be obtained, either on the railroad location by change of track, or by purchase, or, if need be, by legal process. And we especially advise that this be done promptly. The claim for a better station is by no means a new one, and in this case longer delay is a denial of rights. When a duty is admitted, its speedy performance does much to preserve proper relations between the company and its customers.

Action should be taken at once.

By the Board.

THOMAS RUSSELL, *Chairman*.

JUNE 11, 1884.

PETITION OF WILLIAM E. HANDY FOR EXPRESS
FACILITIES ON THE OLD COLONY RAILROAD.

William E. Handy of Hanover desires to do an express business on the Old Colony Railroad, between South Weymouth and Boston. The company's agents decline to contract with him.

The extent of the former decisions of this Board is that a company receiving one expressman must receive other "responsible persons" to do a like business. The petitioner does not appear to come within this rule, and we decline to make any recommendation.

By the Board.

THOMAS RUSSELL, *Chairman*,

OCTOBER 2, 1884.

[F.]

FARES AND FREIGHTS.

JOHN C. HAYDEN AND OTHERS, COMPLAINANTS, *v.*
LYNN & BOSTON RAILROAD COMPANY.

The petitioners complain that the company exacts double fares from passengers entering the cars before they reach their Boston terminus at the corner of Cornhill and Scollay Square, and then riding to Chelsea. A recommendation for additional cars was also requested.

Upon the second point the facts shown are the same that exist on all street railway routes. At certain hours in the morning the inward cars are crowded and the outward cars are almost empty, while late in the afternoon this is reversed. One hundred and sixty-four cars are now run, and in summer one hundred and seventy-eight daily. It was not proved that the aldermen of Boston would permit more cars to pass through Cornhill at the crowded hours, or that it would be possible for more cars to pass without creating a block; and with the general knowledge of the Board on this subject it cannot be held that the possibility of granting this part of the petition is proved. The exceptional inconveniences arising from snow in "four-horse time" was not a subject of complaint.

The very slight testimony upon the first point leaves the Board in doubt whether the granting of the petition would most accommodate or inconvenience the passengers to Chelsea, and whether a change of practice would not be followed by a remonstrance, especially from the ladies, who would be anticipated by other persons in getting possession of seats.

It is not unreasonable for the company to have a terminus somewhere, and the steep grade, added to a curve on Sudbury Street, makes it proper that the terminus should be where it is. We cannot advise the stopping of the cars while coming up Sudbury Street. Humanity toward the horses would alone forbid that. Nor can we advise that passengers be allowed to enter the cars while moving up the street; for we cannot recommend the violation of a general rule made to prevent accidents and to promote safety.

And it seems reasonable that passengers wishing to take the cars north of Sudbury Street should do so on their way out, and not on their way in, when their weight must be drawn up a steep grade and round a sharp curve. It is said that if they do this, they may find the seats occupied. But they will be occupied by passengers whose right to a seat is as good as theirs. We cannot call upon the company to discriminate in favor of travellers who wish to take the cars before they have reached their starting point and who have not learned that a walk of twenty rods away from their destination is no longer than a walk of twenty rods toward their destination. To any one whose special circumstances on any particular occasion make it peculiarly desirable to take the inward-bound car for an outward ride, the double fare seems to us a proper charge, — not for the profit of the company, but for the promotion of the convenience of the public. And in the absence of testimony we believe that general opinion would sustain this view.

It was alleged that the rule was not enforced against prominent citizens. Proof of this would have led at once to a recommendation that the rule be rescinded or enforced without partiality or favoritism. But the charge was not sustained, and was shown to have been founded in error. By a relaxation of the rule, which applies to all persons, any passenger is permitted for a single fare to enter the cars opposite Howard Street. The Board cannot recommend any further change in the practice of the company.

By the Board.

THOMAS RUSSELL, *Chairman.*

FEBRUARY 11, 1884.

CHARLES H. DALTON AND OTHERS, PETITIONERS FOR
A REDUCTION OF COAL RATES ON THE BOSTON &
LOWELL RAILROAD.

The petitioners, manufacturers and coal dealers in the city of Lowell, ask the Board to recommend that the rate of eighty-five cents per ton on coal carried from Boston or Salem to Lowell be reduced to sixty-five cents. The case was prepared and presented with unusual care and fullness. The amount of coal carried to Lowell is, in round numbers, 150,000 tons, and the number of persons and corporations receiving it is small. The petitioners argued that the rate was excessive in itself and in comparison with general rates on this road and on others. They also used well known arguments drawn from the former

reports of this Board and from other sources, that cheap coal is cheap power, and that cheap power is the life of the business on which the city exists, and on which the traffic of the road is founded. It was urged that these arguments had become more pertinent now that the water power of Lowell has been long ago fully occupied, and since the establishment of manufactures near to the raw materials of coal and cotton has made it necessary to abandon coarse fabrics and to manufacture finer goods needing for every improvement new applications of heat. The higher grade of manufactures demands a higher grade of labor. And this higher class of laborers consume more, and furnish more traffic for railroads. The petition is founded upon the law requiring reasonable rates, and thus re-enacting the common law. And the question is whether the rates charged are so manifestly unreasonable that the Board is called upon to give a recommendation for their reduction under the statute, with a report, if this is not regarded, to the attorney-general or the General Court for further action. It is not a question whether the members of the Board would fix the same rate if they were acting as directors. Still less is it a question whether as sound commercial policy it would not be well for all the railroad companies in the State to reduce their coal rates so that our manufacturing industries may better meet the competition of places more favored by nature. Upon commercial questions like this the Board has never given formal recommendations. It has, for instance, suggested that in the long run the carrying of coal at cost might be desirable. But it never formally recommended this course to any railroad company, nor supposed that a corporation failing to comply with the suggestion became liable to the penalties provided for a refusal of reasonable rates. The legislature of Massachusetts has wisely refrained from giving to its Commissioners the power of fixing rates. And the experience of other States has not been such as to cause regret for this policy. The theory has been that, on the whole, each company would best understand its own interests and manage its own affairs, subject to the supervision of the State through its Commission, and, in case of need, to action by the General Court. And a rate may be regarded as unwise or inexpedient without being so unreasonable as to call for the action of this Board or for intervention by the legislature.

1. The question of what is a reasonable charge for freight service of any kind is a most difficult one. There is high authority for saying that "the answer to the question of what is a reasonable charge for moving it necessarily depends upon what it costs to move it." But we learn from the same source that "few things are more fallacious than the usual estimates made in answer to inquiries as to what it costs to move a ton of freight." And an authority equally

high scouts the idea that the cost of service fixes the rate; and makes the value of the service rendered the sole criterion, a doctrine which approaches too near to the theory of imposing "all that traffic will bear." Even if the cost of service were to be considered alone, it would not be the cost of the special service in question considered by itself. We should not take the railroad company as existing and as organized and maintained with all its salaries and other expenses, and then inquire what it will cost to add to its business another kind of traffic. Every kind of traffic must, of course, share the general expenses of the enterprise; and value of service, as well as cost, must have some weight.

2. The comparison of rates to Lowell with through rates on the Boston & Lowell Railroad is of little value. The pro rata mileage of a railroad twenty-six miles long, which is one link of a line extending through several States, bears no relation capable of being stated or estimated to the proper charge for freight over the twenty-six miles. If, indeed, through business were persistently conducted at a loss, and if local rates were swelled to make up for that loss, this would be an injustice not to be endured. But this is not claimed, and the petitioners expressly admit that the average rate for through freight affords some profit. Moreover, if this company has ever erred by reaching for through freight of questionable value, it has now adopted a wiser policy, and has informed its stockholders that henceforth "no traffic will be encouraged that places an assessment upon our local interests to meet the deficiencies occasioned by being a very small part of a very long line."

3. A comparison with rates for like distance on other railroads in this State utterly fails to show unreasonableness in the charge. The Boston & Maine Railroad's rate to Lowell is precisely the same with that of the Boston & Lowell, and the same amount is charged to Lawrence and to Andover. The Eastern makes the same charge to Lawrence. The Fitchburg charges 10 cents less to Concord, which is six miles nearer, and 35 cents more to Ayer Junction, which is nine miles farther. The rate of the Boston & Providence to Mansfield, 18 miles, is 85 cents, and to East Foxborough, 20½ miles, it is \$1.00. The Boston & Albany receives 75 cents for carrying coal to Auburndale, 10 miles, and 90 cents to South Framingham, 21 miles, Cordaville 27 and Westborough 32 miles. The Providence & Worcester Railroad charges \$1.10 to Uxbridge, 24 miles, and to Whitin's, 26 miles, or, deducting for wharfage, \$1.00, and to Northbridge, 31 miles, \$1.15, or, with wharfage deducted, \$1.05. The New York & New England charges \$1.00 to Walpole, 19 miles, and \$1.25 to Franklin, 28 miles. The Old Colony receives 75 cents per ton for coal from Somerset to Mansfield, 20 miles, \$1.10 to Walpole, 29 miles, and \$1.00 to Easton,

North Easton, Bridgewater, East Bridgewater and North Abington, which are respectively 20, 22, 24, 28 and 30 miles. A like charge of \$1.00 is made for more distant points. On all this there is a small rebate for large quantities carried, to which no objection has ever been made. It is true that an equal rate is charged for coal taken from the sheds of the coal company at New Bedford, which is at a greater distance from these points, because the shorter route fixes the price. No consumer would submit to an additional charge for having his freight hauled eleven or twelve miles farther than was necessary; and this equality of rates from the more distant points only serves to show of how little consequence mere distance is in fixing freight rates.

4. Rates for longer distances are, as intimated above, of slight value as a basis of comparison, for it is well settled that the longer the haul the lower is the charge per mile. And the terminal expenses are the chief items in making up the rate for a short distance, while they are not increased for a long one.

5. The terminals at Lowell are exceptional in extent and in cost. They include sixteen miles of track, with many expensive bridges, and the yearly expenditure for keeping them in repair is great, including, among other items for each of the last two years, \$5,000 for the mere material for planking.

A good test of fairness in price for this accommodation is furnished by the agreement between the different roads for a like service to that which is rendered by the respondents to the petitioners. The Boston & Maine Railroad gives the Boston & Lowell at Lawrence just such a service, and receives for it 30 cents per ton on all freights, including coal. The Boston & Lowell performs a like service for the Boston & Maine at Lowell, but the two bills by no means balance each other. The amount paid to the Boston & Maine is very much larger than the set off, so that it cannot be said that the rate is a matter of indifference. The continued payment of a considerable sum every month by the Boston & Lowell is strong proof that the rate appears to its managers to be a reasonable one. The Old Colony Railroad Company also pays to the Boston & Lowell, without remonstrance, 25 cents for merchandise delivered to, and 40 cents for goods delivered from, the corporations.

The Boston terminals are also very costly, and, by reason of these terminals, coal avoids heavy bridge charges and burdensome cost and annoyance caused by demurrage. It is, indeed, well known that a great part of this expenditure was made with a view to very different business; and we cannot agree with the representatives of the Boston & Lowell road that the construction of an elevator is properly charged to coal freights. But after making all proper allowances, the interest on a large investment at this point is justly considered as part of the

cost of coal freights. And the Salem terminals also represent a great outlay. The terminal charge for through freight at this end of the route is 30 cents; and taking it, including switching, as 25 cents for coal, and adding 25 cents for switching and terminals at Lowell, only 35 cents would remain for the mere haul of 26 miles and for drawing the empty cars back. Of course the rates of other roads include terminals. But, as a rule, they have no such facilities as this road has at Lowell, and no road has distributing tracks of such extent at the place of delivery. The great cost of these is an answer to the allegation that at no place is so large a quantity of coal or of any one kind of freight delivered. The petitioners, apparently, have not appreciated this great item of cost when they have estimated the profits of the Boston & Lowell Railroad Company upon this branch of traffic. In our view the advantage to the carrier of an exceptional volume of business is equalled by the exceptional advantages which have been given to its customers. It must also be borne in mind that the coal business is not distributed through the year, but that the costly equipment provided for this traffic lies idle, earning nothing and suffering deterioration for a considerable part of the year.

6. In 1872 the question of coal rates to Lowell was fully considered by the Board. At that time the charge was \$1.25 per ton (or, allowing for the depreciated currency, about \$1.10) and the additional cost of delivery by teams to the consumers is stated to have amounted to \$1,500,000 annually. Besides this, heavy costs were incurred for demurrage, exceeding in the case of one customer \$1,700 in one year and \$3,900 in another.

The Board did not then feel authorized to condemn the terms as unreasonable, although it regarded reduction of cost and increase of accommodation as very desirable. It did not undertake to say what would be reasonable terms, or even to decide what it costs to carry a ton of coal from Boston to Lowell. Nor have sufficient data been furnished even now to enable us to answer that question. But, in view of the great reduction made and of the facilities furnished, we can say that the charge has not been proved to be so unreasonable as to call for the action of the Board under the statute.

Certainly the general result of the operations of this company does not show that the profits have been excessive, for its gains have been moderate, and its average dividends have not of late years been unreasonably large. Nor can it be said that, while other rates are low, the tariff on coal is high, as compared with general freight. Upon this as upon other roads coal is from its nature and from general policy carried at the lowest rates. Results show that general rates are reasonable, and coal rates are not an exception.

7. Another fact bears strongly on this question. Excessive rates

are generally found as the result of monopoly. Competition is usually regarded as the cure for unreasonable charges. But three railroads compete for the business of Lowell. The relations between the respondents and one of its rivals have not always been such as to exclude the possibility of even keen competition for business. The Old Colony Railroad is so situated that it will not be suspected of having combined to keep up coal rates. The fact that almost the whole business has been so long left to the Boston & Lowell tends strongly to prove that its rates cannot be very unreasonable.

But we repeat that, as a matter of expediency, we agree with our predecessor that a wise and far seeing policy would, on this as on all roads in Massachusetts, reduce coal freights to the lowest possible terms. And this is especially desirable in the great manufacturing cities which were founded in reliance upon water power, but which are now compelled to depend largely upon coal for the successful maintenance of their industries.

This suggestion is made notwithstanding the fact that the cost of transportation by this railroad is only about 15 per cent. of the cost of coal delivered at Lowell, and that the whole coal freight in question is from 1 to 2 per cent. of the amount paid for labor by the manufacturing corporations, and like proportions no doubt exist in other manufacturing places. It is not therefore expected that any immediate increase of consumption will be produced by the proposed reduction, or that any possible reduction of rates will perceptibly increase the dividends of the corporations. The suggestion is founded upon the idea that only by economy in every detail of expenditure can our manufacturing interests be maintained, and that the railroad companies which are supported by those industries ought to do their share in promoting such economy. As one of the witnesses said, "Our manufacturers must live by saving infinitesimals." In that saving the carrier and the manufacturer have a joint interest. And a moderate reduction of rates with reference to this fact would tend to promote those friendly relations that ought to exist between the railroad companies and their customers.

By the Board.

THOMAS RUSSELL, *Chairman.*

MARCH 11, 1884.

SELECTMEN OF BROOKLINE, PETITIONERS FOR A REDUCTION OF PASSENGER RATES ON THE BOSTON & ALBANY RAILROAD.

The petition states that the rates of fare between Boston and the stations in Brookline are higher than those charged upon other roads, and asks a recommendation that they be reduced. The present rates are as follows:—

STATIONS.	Miles.	Single.	Ten	One Hundred.
Cottage Farm,	2.75	\$0 07	\$0 63	\$6 00
Chapel Station,	2.75	07	63	6 00
Longwood,	3.00	07	63	6 00
Brookline,	3.75	09	63	6 00
Cypress Street,	4.25	11	1 00	8 35
Reservoir,	5.60	13	1 13	8 35

The case, which was elaborately prepared, was argued with great force and ingenuity, and it was supported by many prominent citizens, who appeared rather for the welfare of the town than for their own immediate interests.

The application is founded on the right of the people to have reasonable fares, and the duty of every railroad company to furnish such fares. The power of fixing rates, either for freight or passengers, has wisely been withheld from the commission of this State. The theory here has been that the railroad companies shall be allowed to manage their own affairs subject to State supervision through the Board, and in case of need by the General Court. No formal recommendation under the statute should be given except upon a case which is to be followed by an appeal for legislation if the advice is not heeded. And this was recognized by the counsel for the petitioners, who distinctly announced that they were demanding a right.

In deciding whether this is such a case, we must refer to the general rule making the rate of fare depend upon distance and certainly not increasing the rate per mile, as the length of the route increases. This is supported by good reasons; and, with exceptions to be spoken of hereafter, it is universal.

If as a matter of right the fare to Brookline were reduced to five cents as the petitioners ask, the longer routes must be reduced at least in the same proportion. The rate to Springfield, for instance, would be at most \$1.32. The fare to South Framingham could not exceed 28 cents, to Worcester 59, to East Brookfield 85 cents. The maximum for Pittsfield would be \$2. These are all proportional to mileage as compared with the distance of Brookline from Boston, taking it as stated by the petitioners. It is in fact a trifle greater, and this would slightly decrease the rates as given above. Like reductions would take place on all the roads in the State, and it is probable that this operation would be impossible except by making them all insolvent. Even the immense increase of travel, which would be attended with a considerable increase of expense, would not support the companies.

This would seem to settle the question of right as to the proposed reduction. For we must foresee immediate applications for like recommendations which could not be refused, and which would be ruinous to all our railroad enterprises.

It has indeed occurred to the Board that the Boston & Albany Railroad Company, in view of its large receipts, might well make a reasonable reduction in its fares, especially as it appears that only by an error in bookkeeping is the cost per train mile swelled to \$1.013, while it is in reality only \$0.901 (annual report of Board 1884, p. 27). The cost per passenger train mile is somewhat less. The fact that large profits are returned, notwithstanding the considerable amounts annually charged to operating expenses which are really expended for permanent improvements, would seem to show the advisability of a general and moderate reduction of fares. But this by no means proves that a petition for a considerable and exceptional reduction upon one branch or any one portion of the road should be granted. On the contrary, such a piece-meal reduction might interfere with any larger measure; and those who live on other parts of the line might justly complain that their interest were sacrificed by the excessive reduction of rates already lower than theirs.

It has been said that the general rule has been rates proportioned in some degree to the length of route. An exception has been made as to suburban travel where roads are competing with each other for suburban residents upon their lines. Rates made low from this motive are made still lower by the wholesale price of season or package tickets. On a few roads a further exception has been made as an experiment with this class of travel by fixing a low rate of fare uniform for several stations, trusting for profit to the large number of persons congregated near the metropolis and to the hope of building up neighboring villages by cheap transportation. Such an experiment has

been currently reported to have succeeded on the Boston & Providence Railroad. But the managers of that company by no means regard the success of their experiment as proved, because of the great increase of expenses attending it. A like attempt has failed on the New York & New England. Such experiments, although they may deserve respect and encouragement, are not binding upon railroad companies that prefer to operate their roads upon general and well-established principles. No right is created for the people of one community because a limited experiment is tried in transporting the people of another community. Still less can a road competing for custom by trying a novel policy, and so doing in disregard of general rules, force upon its rivals the adoption of an exceptional system. And this disposes of the comparisons that seemed most pertinent to this case.

The comparison made with the elevated railways of New York is too remote. It is wholly dissimilar in all details. The difference between the circumstances of the two cases makes intelligent comparison impossible. And this becomes more manifest when we are asked, as we were in this case, to consider doubtful questions of New York law and New York politics.

Two errors have misled the petitioners in computing the fares to which they feel that they are entitled. 1. They forget that Brookline is on a branch road, with all its stations except Cottage Farm on a branch, and that a branch is less remunerative than the same number of miles on a main road where the volume of business is found. This, however, is so plain that it only needs to be stated to be understood. The changes made and proposed still leave this a branch of the Boston & Albany road. 2. They have regarded the local cost on the branch as the chief expense of their route, without making sufficient allowance for their share of nearly two miles of the most expensive part of the Boston & Albany tracks, and for their share also in the costly terminal station. They must contribute, in addition, their proportion of the salaries and general expenses of the company. It is very evident that if each populous place could come forward and ask for rates founded upon the assumption that the road was built and maintained without regard to this place, and that its business was to be added to the existing traffic as clear gain, with only its local expenses allowed, it would result either in the failure of the company or in heavy charges to all the other traffic on the road. The fact that this was not appreciated by the Boston & Worcester Railroad Company in their reports does not confer rights upon the people of Brookline. Their rights under the law cannot be made to depend upon an error in bookkeeping made by the predecessors in title of the Boston & Albany Railroad Company.

While it is impossible to state just what it costs to carry a passenger between Boston and Brookline, it certainly has not been proved that this traffic yields an excessive profit, when the proper charges are made against its receipts.

Even if it were shown that it cost much less to carry Brookline passengers to and from Boston than the average of passengers on the road, this would not be conclusive as to the petitioners' rights. The people in a compact village cannot say that because they are numerous and therefore profitable customers as compared with certain other places on the road, therefore they are entitled to a large reduction of rates. If this were so, the rates for all the sparsely settled villages on the line must be raised. No such principle is recognized in railroad management or legislation. The managers must take business as it comes, and attend to the wants of all places on the route, great or small. And they are entitled to a fair compensation founded chiefly on the general cost of transportation, and bearing some relation to the distance of each point from the terminus. This road, like almost every other railroad, has stations, and must have stations within the limits of Brookline and elsewhere which do not pay for the expense of stopping at them. If no surplus were received at more profitable points these stops must be discontinued.

The petition only refers to fares. Other matters were spoken of by some witnesses, and it was apparent that some of them were misunderstood; and some, which were objectionable rather from the manner than from the matter of the change, had caused more feeling than the rates. Discontent resulted from the announcement of general reductions, coupled with a schedule of rates causing a slight increase of cost (from \$36 to \$37.44) for two daily rides for a year. But this complaint ignored the facts that under the old system, neglect to use the coupon tickets within the quarter, from sickness, absence or other cause, made them worthless; that package tickets are of more value than coupons, because they are good in the hands of all persons; and, above all, that there was a substantial reduction to a portion of the public who do not use season tickets, and for whose benefit chiefly this hearing was sought.

The complaint of the parties who formerly rode four times or more every day, and who cannot now do this at the same cost, is met by the double answer that their privilege was unreasonable as compared with the price paid by other passengers, and by the further fact that the large number of trains now run furnish a great convenience to the community and are a source of expense to the company.

Upon the whole we cannot say that any of the rates are unreasonably high. The special circumstances of the different stations need not be particularly discussed as they are covered by the general prin-

ciples of the decision. It is only necessary to add that the higher mileage rate to Cottage Farm and Chapel is accounted for by the well founded and well recognized principle of a minimum for short distances.

The people of Brookline are, however, entitled to take advantage of one exception which the statute has made to the general rule regarding rates. This exception was founded on a desire to provide healthful suburban homes for the families of Boston mechanics and other workingmen. The benevolent scheme which was promoted by the late Josiah Quincy resulted in the enactment of chapter 348 of 1872, now section 182 of chapter 112, Public Statutes, providing for cheap morning and evening trains, with yearly season tickets at \$3 per mile per year, and quarterly tickets at \$1 per mile. This privilege can be had when requested by 200 persons proposing to avail themselves of it. And it would appear to furnish just the kind of accommodation desired. For, as has been said before, low fares seemed to be asked not so much for the persons who testified as for others who are desirable as tenants and as purchasers of land. The rates by the statute train would be as follows:—

STATIONS.	Miles.	Quarterly.	Yearly.
Cottage Farm,	2.75	\$2 75	\$8 25
Chapel,	2.75	2 75	8 25
Longwood,	3.00	3 00	9 00
Brookline,	3.75	3 75	11 25
Cypress Street,	4.25	4 25	12 75
Reservoir,	5.60	5 60	16 80

When such trains have been requested the company will grant them without any recommendation from this Board. And this will remove, so far as it can be removed by law, the obstacles which check the residence of men of limited means in Brookline.

Finally it was stated at the hearing that the managers of the Boston & Albany Railroad intend to abolish the half-rate heretofore allowed for young persons coming to Boston for educational purposes. The practice of allowing "school tickets" at greatly reduced rates is very general, and it is not confined to suburban travel. It is unnecessary to dwell upon the policy which justifies and demands this practice.

And the Board strongly recommends to the managers of this company not to abandon it, nor to make any increase in the cost of such tickets.

For the Board,

THOMAS RUSSELL, *Chairman.*

MARCH 20, 1884.

SELECTMEN OF WINTHROP AND OTHERS, PETITIONERS
FOR A REDUCTION OF PASSENGER RATES ON THE
BOSTON, REVERE BEACH & LYNN RAILROAD.

The selectmen of Winthrop, with many petitioners from Winthrop Junction, Beachmont, and Crescent Beach, complain that passenger rates are excessive, and ask that a reduction be recommended. The charges complained of are \$6.50, \$7.50, and \$8.50 for 100-trip tickets to the places named, distant from Boston respectively $3\frac{1}{4}$, $4\frac{1}{2}$, and 5 miles. It is hardly necessary to say that in Massachusetts the power of fixing rates has not been given to Commissioners. Only when fares or rates are manifestly and palpably unreasonable, it is our duty to recommend a reduction; and, if necessary, recommendation may be followed by an appeal to the legislature. A rate may appear to the Board to be unwise, and calculated to produce discontent, and therefore to injure the company; but this does not authorize us to recommend reduction if it is not unreasonable. Especially is this the case when an advance is made from rates unreasonably low. Policy might prevent such an advance, but it cannot therefore be condemned as unreasonable. It is very difficult to decide what rates are reasonable on this road by comparison with others, because there is no similar railroad in the State. The ferry which connects with the Boston terminus has been considered as equal in cost to four or five miles of road. But as only $2\frac{1}{2}$ cents are charged for ferriage from terminus to terminus it has appeared to us heretofore that no more than this amount could be properly charged for ferriage to passengers on the road. Making allowance for this, the charges are not high as compared with any other road terminating in Boston. The question was asked at the hearing whether, without the ferry, the three-fourths of a mile, now extending over the water, would not, at Boston prices for land, have been exceedingly expensive. One simple answer is that if such a purchase had been necessary a road nine miles long would not have been constructed. Costly terminals could not be maintained by such a road.

Making proper allowance for the cost of maintaining the ferry we cannot pronounce these rates unreasonable by comparison with other roads, even if we regard the five-cent experiment which failed on the New York & New England, or the like experiment which is still regarded as problematical on the Boston & Providence. An exaggerated idea of the discrepancy between suburban rates on this and other roads has prevailed with a portion of the petitioners, some of whom have been misled with the idea that a cent a mile was a common and even a statute rate. This idea probably was suggested by the act providing for what are called workmen's trains. The right to such trains is not in question under this petition, and needs no action by this Board. It is a statute right, which parties can secure by asking it of the company in the way provided by law.

But as compared with the rates on another, and the most important point on this road itself, these fares are manifestly unjust and unequal, and therefore unreasonable. The fare to Lynn, $9\frac{1}{2}$ miles distant, is \$15 per quarter, and passengers holding such tickets are allowed to ride on the Lord's day, thus reducing the charge for each ride to eight cents and a slight fraction ($8\frac{12}{91}$), while $8\frac{1}{2}$ cents are charged for riding five miles to Crescent Beach. A fair allowance must be made for the fact that not all the rides are taken which a season ticket permits, and a slight allowance may also be made for a reduced charge per mile on increased mileage. But the discrepancy is still beyond reason. It becomes more apparent if we adopt the railroad managers' theory and deduct $2\frac{1}{2}$ cents ferriage from each fare to obtain the true railroad charge. We then have 4 cents for $2\frac{1}{2}$ miles to the Junction, five cents for $4\frac{1}{2}$ to Beachmont, 6 cents for $5\frac{1}{4}$ to Crescent Beach, and $5\frac{5}{8}$ cents for $8\frac{4}{5}$ miles to Lynn.

Now all these points are competing for residents. Their growth depends, among other things, upon cheap and easy transportation. An excessive charge to one point as compared with another is discrimination against the place and against its prosperity. In regard to freight a positive statute forbids such preference, when it is carried so far as to exact a higher rate for "the short haul." Our statute does not apply to passenger fares, but the just principle of the law does apply when, as in this case, a positive and injurious discrimination is exercised against one place or series of places, and in favor of another place lying on the same route. While such an unnatural disadvantage is imposed upon any place it will always cause well founded discontent. The Board well understand that the reasons for establishing the discrepancy in rates is not any desire on the part of the company to be unfair, but a difficulty arising from its relations with another corporation. Still its practical result is a grievance of which the petitioners have a right to complain. Upon this single ground, that the

fares to the three points are unequal and disproportionate in comparison with the Lynn fare, we recommend to the president and directors of this company to revise their schedule of fares so as to do away with this inequality until a system of relatively just rates can be established for the whole road. The express request of the petitioners will be met by restoring the old season-ticket rates for those who prefer them to the present system.

THOMAS RUSSELL, *Chairman.*

JUNE 11, 1884.

SELECTMEN OF ARLINGTON, COMPLAINANTS, v. BOSTON & LOWELL RAILROAD CORPORATION.

The selectmen of Arlington, at the request of many citizens, complain that the rates of fare between Arlington Heights and Boston are unreasonably high, and especially that they are too high in comparison with other points on the same road.

The rates are as follows, the distance being eight miles : Single tickets are 20 cents, 10-trip tickets \$1.40, 100-trip tickets \$12.60, season tickets, three months, \$14. The chief objection was to the hundred-trip tickets.

Without considering the reasonableness of these rates in themselves, the following table of fares on the branch shows the grievance of which especial complaint is made : —

STATIONS.	Miles.	Single Passage.	10-ride Ticket.	100-ride Ticket.	Season, 3 months.
Arlington,	6.5	13 cts.	\$0 90	\$8 00	—
Brattle Station, . . .	7	18 "	1 20	10 80	\$13 50
Arlington Heights, . . .	8	20 "	1 40	12 60	14 00
East Lexington, . . .	9	23 "	1 60	14 40	15 00
Pierce's Bridge, . . .	9.5	24 "	1 75	15 75	16 00
Munroe's,	10	25 "	2 00	18 00	16 00
Lexington,	11	28 "	2 00	18 00	16 00
North Lexington, . . .	12.5	33 "	2 50	22 50	17 50

It appears, therefore, that to the rate for a passage of $6\frac{1}{2}$ miles to Arlington Centre 57 per cent. is added for the $1\frac{1}{2}$ miles beyond Arlington Centre. The passenger riding on a hundred-trip ticket to the Centre pays \$1.23 for a hundred miles. The passenger continuing his ride to the Heights pays \$3.66 for his hundred miles which he rides between those two stations.

No good reason is given for this gross discrepancy. The management admits that it is a discrimination against the Heights and in favor of the Centre, and assigns no cause for it except that it is the intention of the company at some future time to give to the Centre further advantages in the form of a loop line. This intention seems to the Board to have no bearing upon the question. And we fail to see how the present disadvantages of the inhabitants of the Heights as compared with those of the Centre can even be palliated by the prospect that at some future time they will be greatly increased.

The two places, Arlington and Arlington Heights, are competing with each other for residents. The discrepancy in the price of tickets is an undue advantage to one and a prejudice to the other. This in regard to passenger rates is not forbidden by the words of any statute. But it is unfair and unjust, and therefore unreasonable, to impose such a disadvantage upon any place. It is not right to make the customers of the road at one station pay an excessively high fare in order that those at the next station may ride at a rate exceedingly low.

It is hard to answer those who ride a long distance over the road, when they complain that their rates are higher per mile than those of persons riding a very short distance. But it is impossible to answer these complaints when they come from persons riding in the same train, living in the same town, situated in the same way, and suffering this enormous discrimination because they ride a mile and a half further than their neighbors. The testimony shows that a large number of persons live at Arlington Heights whose daily business calls them to Boston, a larger number in proportion to the whole number of passengers than those residing in Arlington Centre. This is the class in whose favor the system of low suburban mileage is sometimes established. Without deciding that this discrimination can never be properly allowed, it is enough for the present case to say that in our view so great and sudden an increase of the mileage rate can never be justified, and that here there is no one circumstance to justify it.

The Board, therefore, informs the Boston & Lowell Railroad Corporation that it regards the fares to Arlington Heights, and especially the rates for one-hundred-ride tickets, as compared with those to Arlington Centre, to be so excessive as to constitute an undue and unreasonable disadvantage to the residents of Arlington Heights, and that in order to promote their accommodation it is reasonable and

expedient promptly to revise and reduce those fares, so as to do away with this injustice.

By the Board.

THOMAS RUSSELL, *Chairman*.

JULY 28, 1884.

SELECTMEN OF PITTSFIELD, COMPLAINANTS, *v.* BOSTON & ALBANY RAILROAD COMPANY, AS TO COAL RATES FROM HUDSON AND ALBANY, RESPECTIVELY, TO PITTSFIELD.

To the Selectmen of Pittsfield.

GENTLEMEN:—The Board has, at your request, investigated the operation of the Boston & Albany Railroad in regard to coal freight. The petition upon which your honorable board acted was as follows:—

“Your petitioners represent that they have cause of complaint against said railroad, as follows: That the Boston & Albany Railroad Company have established a rate of freight on coal from East Albany, on the Hudson River, to Pittsfield and other points in Berkshire County, of \$1 per gross ton, a distance of nearly 50 miles; that the said corporation are charging for carrying coal from Hudson, N. Y., to Pittsfield and other points, \$1.25 per gross ton, a distance of only 43 miles; that heretofore the said corporation has charged the same rate of freight for coal from Hudson to Pittsfield as from East Albany to Pittsfield; that by reason of this discrimination in freight in favor of the longer distance, advantage is given to certain parties; that said discrimination in freights on coal is contrary to the spirit of the laws of this Commonwealth by statute made and provided; wherefore your petitioners pray that your honorable Board make an ex-parte investigation and inquiry, and make such orders, decrees and recommendations as shall seem proper”

As you did not ask for a public hearing, and as the original petition expressly called for an ex-parte investigation, we have only resorted to the slight evidence furnished by the petitioners and to an examination of the railroad officials.

1. We find that for coal from East Albany to Pittsfield the freight charge is precisely the same as from Hudson to Pittsfield, viz.: \$1.25 per ton, except for coal “coming by rail received on cars at East Albany.” A shipper having a barge-load of coal at either place would pay the same rate, and would in addition pay for unloading the barge. The schedule of rates expressly states that the one dollar charge applies only to the coal above specified.

This reduced price is the share of the through rate by rail from the mines. And this reduction has been secured for their customers by the managers of the Boston & Albany, looking chiefly to the introduction of cheap bituminous coal, but applying the rule to all coal. Of course the motive of the railroad company is its own gain, but the participation in the low through rates is a gain to their customers. The amount of business is, however, small, and if the practice were illegal the company would prefer to give it up rather than to interfere with their large traffic at Hudson. This we should regret. But it is not necessary, for the discrepancy between the two rates on these different routes is not forbidden by the letter or the spirit of any law.

2. The statute commonly known as the "short-haul law" is in substance as follows: — "No railroad corporation shall charge or receive for the transportation of freight to any station on its road a greater sum than is at the time charged or received for the transportation of the like class and quantity of freight *from the same original point of departure* to a station at a greater distance on its road *in the same direction*."

The words in italics are a substantive and essential part of the law, without which it could not have been passed. We have a right to say this, because such a law was proposed to the legislature, and was rejected in 1871, when the "short-haul law" was first enacted. This proposed bill read as follows: —

"No railroad corporation of this Commonwealth shall charge or collect for the transportation of goods or merchandise for any shorter distance any larger amount as toll or freight than is charged or collected for the carriage of similar quantities of the same class of goods over a longer distance upon the same road."

Such a bill would forbid the collection of \$1.25 from Hudson and of \$1 from Albany. But the General Court not only have not enacted such a bill, but have refused so to do, and for good reasons. It is interesting to notice that when the "short-haul law" of this State is censured, as it recently has been by interested parties, it is always misrepresented to be just what the petitioners have supposed it to be.

3. While a rate over one route or in one direction lower than that charged in another is not absolutely forbidden, such a discrepancy is evidence admissible upon the question of reasonableness, and it calls for explanation. This explanation has been given above and appears to be satisfactory. And shippers from Hudson have no reason to complain that shippers *via* Albany have an advantage, which, from the nature of the case, they cannot share. The rate from Hudson is not shown to be in itself unreasonable. And the lower rate from East Albany is fully accounted for, because it only applies in fact to car-

loads of coal which have come from mines under a comparatively low through rate.

4. If the petitioners are among those who object to the arrangement by which the Boston & Albany receives coal at Hudson, and if this is intended as an indirect mode of censuring that arrangement, the Board feels that it has already sufficiently discussed that subject. It was especially discussed in the report of the Board when Mr. Adams was chairman. (Tenth Annual Report, pp. 378-383.)

The statement there made is true to-day, that under the joint arrangement coal is 15 cents cheaper at Rondout than at New York Harbor.

Finally, when this matter was last before this Board the Boston & Albany Company offered to give up this arrangement if it appeared to the Board to be objectionable, as being of doubtful legality or as approaching too near to the nature of a monopoly or as causing inconvenience to any considerable portion of the public. The Board shrunk from recommending the discontinuance of a practice which was adopted because of a suggestion of their predecessors for the sake of cheapening coal to consumers, and they were unwilling to recommend a course which, as they believe, would raise the price of this important commodity.

The same offer was made and not accepted when the question came before the legislature, and when the corporation again, through prominent representatives of Berkshire, offered to discontinue the system if dealers and manufacturers fairly representing the chief consumers of coal in Berkshire would sign the following petition:—

To the President and Directors of the Boston & Albany Railroad Company:—

“The undersigned, consumers of coal in Berkshire County, respectfully ask that your company will cease to bring coal to our county on a joint tariff with the Delaware & Hudson Canal Company, as heretofore, and will fix a rate from Hudson to points on your road which shall give you a sum equal to the proportion which you receive of the joint rate under the business as heretofore done.”

No signatures were obtained. The Boston & Albany Railroad Company, during the present investigation, renewed its offer, and authorize its publication, so that if the portion of the public which is most interested desire the discontinuance of the arrangement it will be discontinued.

In conclusion, the Board does not think it for the interest of the public to make any recommendation on the matter to the managers of the Boston & Albany Railroad Company.

For the Board.

THOMAS RUSSELL, *Chairman.*

[G.]

SUNDAY TRAINS.

PETITION OF THE BOSTON, HOOSAC TUNNEL & WESTERN RAILWAY AND OF THE FITCHBURG RAILROAD COMPANY, FOR LEAVE TO RUN TRAINS ON THE LORD'S DAY OVER THE STATE RAILROAD.

The first named company asks of the Railway Commissioners leave to run a Lord's Day train from the State line, reaching North Adams about 5.30 A.M., with another leaving North Adams for the West after 11 P.M. The Fitchburg Railroad Company asks permission to run from North Adams at 5.48 A.M., reaching Greenfield at 7.01 A.M., and also for a train leaving Greenfield westward at 9.45 P.M., reaching North Adams at 11.02 P.M. The application, under chap. 98, sect. 15, Public Statutes, was made known widely by advertisement and otherwise. It was supported by many petitioners living in North Adams. One gentleman from Greenfield appeared in opposition, and he brought remonstrances from most of the towns in Franklin, and from some towns in the other western counties. The names were few, but weighty from their character. The wording of these documents, however, left it doubtful whether the nature and hours of the proposed trains were known to the remonstrants. Probably many believed that they were petitioning against the freight and excursion and other trains, which as we learn, are freely run in Western (as in Eastern) Massachusetts without any action of this Board. At the date of the petitions no train was run on the Lord's day under our authority. Request is made in these cases because the parties understand that they cannot run over the State road until such request has been made and granted.

The statute was enacted after very full discussion in 1881. And two years have passed without any attempt to repeal the act. It applies in terms to all through trains on all roads, but was passed with special reference to the possible needs of the State road. It

applies only to "through trains," excluding all mere excursion and local trains. And it is probable that its framers in using the word "through" contemplated only business which in the broadest sense is "through traffic."

The objections urged by the remonstrants are objections to the law rather than to this application. They might well have been urged against its passage or in favor of its repeal. But while it is on the statute book, we must administer it according to its intent. The law enacts expressly or by implication: 1. That Lord's day trains shall not be authorized by the Board unless they are demanded as a matter of necessity or convenience. 2. That when so demanded they shall be authorized. 3. That in permitting such trains due regard shall be had to the observance of the day, or, in other words, that its observance shall be disturbed as little as possible. As we have heretofore said, to permit a Sunday train unnecessary and uncalled for, on a mere argument against Sabbath observance, would be an abuse of trust and a perversion of the statute. But to refuse to authorize such a train as the law permits, because of peculiar views held by the Commissioners, or by any of them, would be to abdicate a duty and to annul the statute. The word "necessity" as used is not a positive, but a relative term. "A case in which any man is physically obliged to travel, can hardly be imagined. But a moral fitness or propriety of travelling, under the circumstances of any particular case, may be deemed necessary." (*Commonwealth v. Knox*, 6 Mass., opinion by C. J. Parsons.) "To save life or prevent or relieve suffering, and this in the case of animals as well as men; to prepare needful food for man and beast; to save property, as in the case of fire, flood or tempest or other unusual peril," have all been recognized by our Supreme Court as lawful, although not strictly necessary. (*Commonwealth v. Sampson*, 97 Mass.) And in such decisions the courts seem only to follow the highest authority.

In this statute the word "necessity" is broadened by the following word "convenience." This is not an additional requirement, but a modification of the former one. Under the general provisions of law works of necessity were already lawful. The act of '81 made the requirement less stringent by introducing the element of convenience.

In construing the law we cannot disregard the change that has taken place in opinion as to the nature of the necessity which justifies work on the Lord's day. This was noticed by Chief Justice Parker in pronouncing the decision in the leading case of *Pearce v. Atwood*, 13 Mass.: "None will contend * * * that any of the rigid laws of Massachusetts relative to the observance of that day are now in force. It is enough to observe, that, by the universal consent of Christians, another holy day has been substituted, and that works of

necessity and charity are not profanations of the Christian Sabbath; so that a poor man, in these days, would not be stoned to death for gathering sticks on the Sabbath, although some among our ancestors so far regarded the law of Moses as of perpetual obligation as to propose for their code the punishment of death for the crime of disregarding or carelessly observing the Sabbath." The well-worded remonstrance of the Old Colony Baptist Association, on the general subject of Sunday trains, states that they "are not desirous of a return of the Jewish or even of the Puritan Sabbath."

These changes of opinion and practice include the lawfulness of such work as is needful for warming places of worship on the Lord's day, — an innovation that once troubled the peace of churches — the use of horse cars to reach places of worship — a convenience which now prevents the removal of at least one of our best known churches in Boston, — moderate exercise by walking and a larger liberty in the selection of reading matter.

The changes are not all of one nature. Within the memory of living men political caucuses were held in Faneuil Hall and elsewhere on the evening of the Lord's day, a practice which would now be regarded as desecration. But most of these innovations have been in the other direction. Perhaps the greatest of them is in the allowance of more labor for the preparation of warm food. In any strict sense of the word this is not a physical necessity except for invalids. Men subsist for long periods without it. Parties in pursuit of pleasure will often deny themselves this luxury much longer than the vast majority of believers in their observance of the Lord's day. Much labor is now allowed in ministering to bodily wants, and it is believed by many good people that the added comfort and contentment permitted by our modern practice tend to secure, especially among young persons, a frame of mind better suited to the day than that induced by the stricter observance of former times. These illustrations are not used to justify one act of wrong doing by pleading the wrong doing of others, but to show that the general sentiment does not regard as wrong what was once held to be so, and thus to prove what was the intent of our General Court when they used the words "necessity and convenience."

The petitioners say that there is an honest demand for a train arriving at North Adams and Greenfield early on Sunday morning, which, also, compels the running of a corresponding train late in the evening. They state and apparently have proved that one chief cause of the comparative failure of the Hoosac Line as a passenger route has been the want of such a train. Among its lesser evils is the loss of a mail contract. It affects not only persons starting from the West and intending to reach home on Sunday, but also persons who hope

to arrive on Saturday or Friday or earlier, but who may be delayed by accident or by the exigencies of business or by other incidents occurring on the way. Often it has happened that eastward bound passengers have been compelled to spend the Lord's day at inconvenient and unfit places; oftener still they have been, with much personal inconvenience, forwarded, at the cost of this line, over the Boston & Albany road to their homes. Their complaints have been disastrous advertisements. And it did not lessen the chagrin of the Fitchburg managers, or of their passengers, that the other road was operated on Sunday without receiving or asking authority, so operated either because everybody assumed it to be a lawful work of necessity, or because no one among all the law-abiding and God-fearing citizens of Massachusetts cared enough for the violation of the Lord's day to institute a suit and test the law.

The hardship to this struggling enterprise is aggravated now by the fact that its chief rival conducts a Sunday business unmolested by the very men who protest against the operation of the Hoosac Line, while they do not lift a finger to prevent the alleged desecration of the day in their own homes by a competing corporation. And here it should be repeated that the petitioners do not ask to be allowed to do wrong because others are allowed to do wrong also. They say that the general approval and universal acquiescence of the Christian community show that what others do, and what they wish to do, is regarded as right.

The testimony proves beyond a doubt that one cause which has paralyzed the Hoosac passenger business, and has helped to make it unremunerative, has been the break in its trains caused by the strict observance of the Lord's day.

This might not be conclusive. The remonstrants may well say that it is better for the State to suffer loss than to commit wrong; that to sanction evil by her influence and example is worse than any pecuniary disadvantage; that the Commonwealth has been drawn into an expenditure of more than \$20,000,000 only for such business as the laws of God approve, and that it is no novelty for Massachusetts to sacrifice gain in devotion to sentiment. They may even draw the line between the active participation in Sunday work involved in the operation of a road owned by the State, and the tacit and passive acquiescence with which her officials wink at the operation of other roads chartered by her laws, and many of them constructed with her aid. But all this begs the question as to what is right, or, in other words, what is necessary and convenient.

Almost every one will admit that some travelling on the Lord's day is needful and right. "A Sabbath day's journey," although short, was lawful travel on the sacred day. Even the solitary remonstrant,

who appeared in person, and whose sincerity all must admire, even he admitted that he might take a Sunday train if called to the sick-bed or the death-bed of his wife or mother, or daughter. And there are many other occasions when universal sentiment commends travelling on the Lord's day. But if it is right that good men should travel on Sunday it is right that there should be trains to convey them. If their journeys are necessary these trains are necessary. And it must happen that every week there will be men whose right or duty it is to travel on the Lord's day. No doubt there will be different views of necessity, different shades of faith among these travellers; but in this age we must allow some liberty to conscience. And if unscrupulous men use these trains for merely secular purposes, they are liable not only to the penalties of the higher law, but to the laws of the State. For the immunity of the carrier by no means protects his passengers (Parsons, C. J., 6 Mass., cited above).

Men may, on the Lord's day, visit places of worship from bad motives; and our highest court is said to have held that in such cases they lose part of the protection which the statutes give to lawful travellers. But this does not impeach the motives of those who sustain these places of worship. If the State finds an existing need of a Sunday train, it cannot be condemned because the train is used without need by men into whose motives the State cannot make inquisition in advance.

The strongest plea for allowing trains to pass from the State line to North Adams and Greenfield is the natural and commendable desire to spend the Lord's day at home. And it must be borne in mind that this class of travellers includes not only those who intend to arrive on that day, but also the many who have been belated by the exigencies and accidents of travel. To such men it is a serious infliction to be compelled to spend the Sabbath at a tavern—probably among scenes wholly unsuitable to the day—away from their usual place of worship—perhaps unable to enjoy their chosen forms or doctrine. Such an interruption by a State line to the journey of a returning traveller does not beget a frame of mind suited to the day. And the location of this road and its connections at Rotterdam Junction and elsewhere offer nothing to mitigate the result.

One of the most powerful pleas addressed to the Board upon this question, refers to "the New England Sabbath." Every Massachusetts man knows the meaning of the phrase. It includes the family at home together on the Lord's day. This feature of the day is valued most where the traditions of the fathers are most highly prized. And the general desire to spend the day at home is an appreciable source of revenue upon one at least of our most prosperous railroads. This feeling appears again in the time-honored practice of ministers in

neighboring towns, travelling to make their exchanges on the morning and evening of the Lord's day. This custom was recognized and approved by our Supreme Court as early as 1816 (*Pearce v. Atwood*, already cited). It surely was not founded in economy merely, nor in a desire for comfort, but in the higher motive of a good man's wish to spend as much of the day as possible at home with his wife and children. The desire is not only lawful but praiseworthy. And the traveller is not necessarily a Sabbath-breaker when he occupies the hours between daybreak and sunrise, or even a little after sunrise, in trying to reach his family at home. We have no right to say that his use of those hours is less acceptable than that of the sleeper whose prolonged slumbers on that morning are perhaps his only observance of the day, and who may be for a moment disturbed by the whistle of the early train.

It is very probable, also, that if the trains stopped at the State line many passengers would use horses and carriages to reach their homes at Williamstown, North Adams and elsewhere, causing more disturbance than one five o'clock train. And this mode of travelling, since tithingmen have become obsolete, is practically unchecked in Massachusetts.

The remonstrant was right in urging that the statute provision for due observance of the day is a substantial part of the act and not an unmeaning phrase designed only to facilitate its passage. But the hours named in the petition make it certain that the authorized trains will not disturb religious worship, and that they cannot seriously impair the quiet which adds so much to the charm of the day. In another month their morning time will be an hour earlier. If other trains shall ever be requested on this or any other road each application will be decided on its own merits. We only give authority [no other being asked] to run trains on the State road between the hours of five and seven in the morning, or at hours still earlier, and in the evening from 9.45 to 11.30. The hours fixed will also secure the trainmen from any severe curtailment of their Lord's day privileges. And we believe that while this decision is a simple duty under the statute, it will save our laws from the reproach which would result from a denial unfounded in principle and unjust in its working.

By the Board.

THOMAS RUSSELL, *Chairman*.

JANUARY 19, 1884.

REMONSTRANCE AGAINST UNNECESSARY SUNDAY FREIGHT TRAINS ON THE BOSTON & ALBANY RAILROAD.

The hearing was had at Springfield by a committee of the Board, on October 15, under the following petition, signed by about 300 citizens, chiefly of Hampden County: "To the Board of Railroad Commissioners: Respectfully represent the undersigned citizens of — that the Boston & Albany Railroad is engaged in violating the Sunday laws of the Commonwealth; that, although necessity and convenience may require the running of one or more through passenger trains on the Lord's day, the welfare of the employees and the interests of the community demand the enforcement of all laws prohibiting the conduct of the other business of the road on that day; and that, inasmuch as it is said that the railroads are compelled to Sunday traffic by competition of other trunk lines delivering merchandise in Boston, and likewise engaged in the violation of the law, justice to one railroad requires the enforcement of the law on all railroads having western connections, and centring in Boston. Your petitioners therefore request that, if in your judgment the Boston & Albany or any other competing railroad is violating the Sunday law of this Commonwealth, your honorable Board may give notice thereof in writing to such corporation, and, if the violation is continued, may report the same to the Attorney-General."

The questions involved were fully presented by able counsel for the petitioners and for the corporation. Among the witnesses were employees and former employees of the company, who were summoned by the authority and at the cost of the Commonwealth. It is not necessary in the view which we have taken as to the duties of the Board to report the testimony, for we are of opinion that it is not our duty to enforce the general penal laws of the State, even against railroad companies. This duty has been assigned to others, and it would be usurpation to invade their province and to act as police judges without the power to sentence, or as a grand jury without authority even to indict. It is true that the words of the railroad act, taken by themselves, might justify this Board in promoting a prosecution whenever a railroad company violated any law. But, taken in their connection, they evidently refer to violation of railroad laws only. So it was understood by the framers of the law, and by the whole community. The authority to take cognizance of violations of law, and to refer such cases to the Attorney-General, was given in 1870. But, although innumerable violations of the Lord's day laws are supposed to have been committed by the railroad companies of the State, it

never occurred to any one to apply to this Board to prosecute, until in 1881 an act was passed authorizing the commissioners to license through trains in certain cases. But no lawyer will claim that authority to license gives power to restrain, or of itself imposes the duty of prosecuting in case of running without a license. It is clear that an act of 1881 could not change the original meaning of the act of 1870 or of 1874. If the words "violation of law" in 1870 meant the violation of railroad law, they do not change their meaning because, by an act of 1881, power was given to the Board to exempt certain trains from the operation of the law. The grant of authority to exempt certain cases from the penalties of the law seems anything but an intimation that the Board should take up the business of enforcing it. The power to license and the power to prosecute are not necessarily or ordinarily related. The enforcement of railroad law was naturally intrusted to this Board, so far as the institution of suits after due warning is concerned; and the Board has rarely found it necessary to go beyond a recommendation. The general enforcement of penal law is given to other tribunals and persons. To illustrate our views — if a railroad corporation should sell liquor or allow it to be sold to travellers in its stations in violation of law (and this is believed not to be wholly an imaginary case), we should not regard it as our duty to prosecute, not because the offence or its prosecution would not be important, but because the duty has been intrusted to others. So if a railroad corporation should publish a libel, or maintain a nuisance by flooding lands or highways, the case would be left to the grand jury and to the district attorney without the intervention of this Board. And this would be done simply because it is their business and not ours. In case of violation of Sunday law, the persons who shall prosecute are specially named in sect. 9, chap. 98 of the statutes. The Board has always acted upon these views, and has declined to appear as a public prosecutor or as a preliminary grand jury, in enforcing against railroad corporations the general penal laws. Nor do we think that adding to our appropriate duties by assuming those of district attorneys, or "of sheriffs, grand jurors and constables," will be a public benefit.

But it is said that, under the general authority of the Board to make suggestions to the General Court, we might report upon the workings of the law as to Sunday trains. But this, except on request of the legislature, would be a stretch of authority. The general policy of observing the Lord's day, the manner of so doing, the extent to which the former rules for Sabbath observing shall be relaxed, are questions of general policy to be decided by the State. Different opinions prevail among laymen and clergymen, and it is not for this Board to try to extend its jurisdiction over hard questions of policy,

theology and morals. Where a practical question under the law comes before the Board, it must be decided. When no such question arises, we are not at liberty to intrude our opinions upon a broad question far beyond our jurisdiction.

But there is one view of the subject which calls upon the Board for a recommendation. Leaving the question "of necessity and charity" to the legal tribunals, and leaving to them also the infliction of penalties in case of violated law, we would direct the attention of the managers of this and of other railroads to the manifest danger of diminishing the efficiency of their employees, and the consequent safety of their trains, arising from the want of a day of rest. We speak of this, not because it is more important than the legal or moral aspects of the subject, but because this is within our jurisdiction, and the other questions are not. All men are agreed, and railroad managers here have expressed their opinion most decidedly, that in this business, most of all, a day of rest is required in order to secure health, vigor of mind and body, and consequent efficiency of service. If there were no higher reason for Sabbath observance, this would be enough, and it cannot be habitually neglected without injury. Allowing for accident and special exigencies; for the movement of live stock, which humanity requires, and for the pressing needs of some species of traffic, it seems plain that there is a tendency to do unnecessary work on Sunday; that its increase is out of all proportion to the growth of general traffic, and that it so encroaches upon the time which is needed for physical and mental repose as to endanger the well-being of men to whom is intrusted the care, not only of property, but of life. We therefore recommend that the managers of the Boston & Albany Railroad Company carefully consider the question whether there is any need of many of the freight trains which now are run on the Lord's day, with the object of greatly reducing their number; that to this end they confer with the managers of the New York Central & Hudson River Railroad and other connecting roads so that in delivering freight to the Boston & Albany regard may be had to this object, and that live stock arriving on Saturday may be, so far as possible, delivered in whole trains and not in parts of trains, composed largely of general merchandise, so as to reduce the number of trains which humanity requires to be forwarded on the Lord's day. And we recommend that they pursue this end of lessening Sunday work, and thereby promoting the welfare of their employees, not in a formal and perfunctory manner, but with the same zeal and interest with which they always seek to perfect the equipment and physical condition of their road. We also recommend that, when Sunday work is necessary, care be taken that one day's rest in seven be secured to every man. And we give the like advice to all

railroad managers in the State. Above all, we recommend not only that no unwilling employee shall be compelled to labor habitually on Sunday, but that all employees be effectually assured that they shall not be exposed to risk of discharge, or to any molestation because of their objection to such labor. For the Commonwealth will not endure that the corporations which are its creatures shall inflict anything resembling punishment upon any man because his conscience forbids him to work on the Lord's day.

By the Board,

THOMAS RUSSELL, *Chairman.*

NOVEMBER 4, 1884.

[H.]

REPORTS ON MISCELLANEOUS SUBJECTS.

HEFFERAN *v.* FITCHBURG RAILROAD COMPANY.

This was a petition to revoke the exemption from the duty of fencing certain land in North Cambridge granted by the county commissioners.

1. The question whether the petitioner has a legal right of way across the track for the driving of cattle and other purposes, is not before the Board. It is exercised under a claim, and it is in litigation. It is as dangerous to passengers to encounter cattle driven under an unfounded claim as if the claim were sound. If no other question were raised, the fence must be erected.

2. It has been shown that this spot, — the premises of the Boston Brick Company, — is a “place where the convenient use of the road would be obstructed by a fence.” The petitioner is in error in supposing that this clause refers only to the use of the road by the company. It mainly refers to its use by customers. This case is therefore excepted from the operation of the statute. There was no need of exemption, and certainly no cause for revoking it.

3. Owing to the construction of the track so near the line of location, a fence would create more danger than it would prevent. Such a fence should not be ordered, but forbidden.

4. It is the duty of the railroad company to acquire land, so that they may erect a safe fence, and still conduct their business conveniently. Application has been made under chap. 401, 1874, for such a strip of land. The Board expects this petition to be pushed with vigor.

5. It does not clearly appear whether the Fitchburg Railroad Company is in position to apply for an injunction to restrain the petitioner from making a use of his alleged way, to the hazard of passengers. If the company has such a right, and especially if he threatens so to use it for the purpose of obtaining an exorbitant price for his land, it will be the duty of the managers of the company to begin proceedings to prevent such use. The petition is refused.

By the Board.

THOMAS RUSSELL, *Chairman.*

THE BALTIMORE & OHIO TELEGRAPH COMPANY *v.* THE
NEW YORK & NEW ENGLAND RAILROAD COMPANY,
CHARLES P. CLARK, RECEIVER.

The petitioner being engaged in the construction of a telegraph line on land adjoining the respondent's location, requested facilities for placing materials on its line at points between stations. The receiver refused, giving as a reason a contract with the Western Union Telegraph Company forbidding the railroad company so to do. This is complained of as a refusal of reasonable facilities, and as subjecting the petitioners to an undue and unreasonable disadvantage as compared with others, and especially as compared with the Western Union Telegraph Company. No question is raised as to jurisdiction by reason of the receivership. While a receiver must ask leave of the court to do many things which the directors of another company could do without leave, his statute duties toward the public, whether they relate to public safety or to public accommodation, are in full force, and are fixed by the laws of each State in which the road is operated. It is unnecessary to construe fully the contract of the Western Union Company. If that contract does not interfere with the respondent's duties as a common carrier, it does not affect this application. If it does attempt to forbid or limit the performance of those duties, it is illegal and void. The facilities asked by the petitioner are not within the scope of the ordinary duties of railroad companies and common carriers. The rule is to deliver passengers and freight at stations established by the company. To entitle the petitioner to a recommendation, it must be shown either that the exceptions to this rule are so numerous that such delivery is to be regarded as a reasonable facility, whenever it is eminently desirable, and also that such a practice is safe and not an unreasonable hindrance to general traffic, or it must be shown that the course of this railroad company has been such toward like applicants that the refusal in this case constitutes undue disadvantage.

1. Very little proof was given of usage to deliver freight between stations. It is, no doubt, true that in the infancy of railroads, when little business was done, certain kinds of freight, especially cordwood and manure, were received and delivered at other points than stations, and that as a favor in special cases building materials were sometimes so delivered. But it is also true that as railroads increased their traffic, and as their managers increased in knowledge, this practice ceased to exist. And it is hardly necessary to say that on crowded roads the delivery of freight at points which are not stations, and which are without side tracks, is not only a hindrance to

business, but a great cause of danger. An occasional favor of the kind referred to would not be a foundation for a request that the practice be extended, but it might well lead to a recommendation by the Board that it should be stopped. While the scattered instances of freight delivery between stations do not make a precedent for demanding such delivery as of right, it is plain that a recommendation made under the statute, founded on exceptional cases, would constitute a precedent. And this, if followed up, would seriously obstruct and endanger travel on our railroads. The evidence on this point calls for no such recommendation.

2. The company has not been shown to have so acted toward the Western Union Company as to raise the question whether the petitioner is subjected to undue disadvantage in dealing with the respondents. The proof of actual special delivery refers to wire which was to be used solely for railroad purposes by the respondent alone. But, assuming that all the material used for constructing the telegraph on this line was carried under the contract and delivered between stations, this gives to no other party any right to similar delivery. No other party stands in the same position, or can ask for delivery under like circumstances. Of the wires to be placed in position, several were for the sole use of the railroad company, and all were for its use, even for its exclusive use, in case of need. The primary object of the telegraph company was the commercial use of wires, but the primary object of the railroad company was to secure their use for railroad purposes; and without them the road could not be operated. The railroad managers secured this on better terms by agreeing to this exceptional mode of delivery. It was part of the consideration for obtaining and maintaining an essential part of their road. Because they paid a price—a transportation privilege—for a service which they needed, it does not follow that they must pay the same price to another party for a service which they do not need and which that party cannot render. A railroad company, by allowing a construction train to stop between stations, does not entitle the contractors of a parallel or neighboring road to demand like stops as a right. And if, instead of building a second track itself, the railroad company should agree with a contractor to do so, and should, for the sake of expedition or cheapness in construction, permit him to make such stop for the delivery of material, this would not confer such a right on other contractors for other roads or for other like work.

The case before us is parallel with that supposed, or rather it is identical, for telegraphic devices are so essential to the operation of a railroad that placing them on the track is railroad construction, and repairing them is repairing the railroad track.

No dealing of the respondent with any other telegraph company is

shown which compels the granting to the petitioners of facilities not generally afforded by railroad companies to their customers, and no recommendation is given by the Board.

THOMAS RUSSELL, *Chairman.*

MAY 17, 1884.

CITY OF NEWBURYPORT, PETITIONER FOR AN INVESTIGATION OF THE NEWBURYPORT & AMESBURY HORSE RAILROAD COMPANY.

The following is the petition : —

“To the honorable the Board of Railroad Commissioners: Your petitioner, the city of Newburyport, a corporation duly organized and existing under the laws of the Commonwealth, by the undersigned, a duly authorized committee of the city council, respectfully represents, and states that it is a stockholder owning 250 shares, and more than two-thirds in amount of the paid-in capital stock in the Newburyport & Amesbury Horse Railroad Company; that the said railroad has been leased to one J. M. Greenough, and said lease assigned to one Edward P. Shaw, who is now operating it under said lease; and your petitioner believes and represents that the said railroad is being mismanaged and run in the interest of a minority of the stockholders, to the loss and damage of the corporation and its property, and in fraud of the rights of your petitioner; that by said management its financial standing has been impaired, and its funds and income wasted and mismanaged; that fraudulent contracts have been made and existing contracts fraudulently carried out, and that the income and capital has been fraudulently misappropriated, and not applied to the payment and liquidation of its indebtedness; that the directors refuse to give your petitioner or its authorized agents or representatives any information about their doings or the condition of the company, and refuse to allow them to inspect the books or papers of the corporation, and fraudulently conceal from them all information concerning their business and financial transactions, to the damage and loss of your petitioner and the jeopardy and injury of the corporation. Wherefore your petitioner prays your honorable Board to cause an examination to be made into the doings of said directors, and the condition of said horse railroad company, that it may cause its books and records to be inspected and examined; also its accounts and expenditures and financial condition; also all contracts made or entered into, written or oral; also in what manner existing contracts and obligations have been carried out and acted upon; also what claims and debts have been compromised and settled, and in what manner, and what claims and obligations remain unperformed and unpaid; and that it may ascertain what amount of stock has been sold, pledged or otherwise disposed of, and by what power or right, and to cause the stock book to be inspected and

copied for the information of your petitioner, and to fully examine into all the doings and transactions of the said board of directors of said horse railroad company, financial and otherwise. A more particular specification of the principal matters desired to be investigated are hereto annexed and marked A.

(Signed) THOMAS H. DAVIS.

And others, Committee of the City Council."

"A — 1, settlement of claim against E. T. Northend for non-repair; 2, failure to collect arrears of rent of E. T. Northend; 3, payment of \$1,000 gratuitously to E. P. Shaw for alleged service in procuring assignment of lease; 4, contract with Shaw for repairs and failure to supervise and enforce the same; 5, overpayment of \$1,000 or more on said contract, and intended payment of further sums; 6, illegal and unnecessary extension of road to E. P. Shaw's wharf; 7, illegal and fraudulent purchase of real estate, stable, etc., from treasurer and lessee; 8, illegal sale or issue of stock for less than its par and less than its market value; 9, illegal sale and issue of stock for no money consideration."

A preliminary question was raised, but not urged, as to the right of the city of Newburyport to bring this petition. The amended charter of the company (chap. 319, 1871), provides that the mayor shall be authorized to cast the vote of the city, and appear and act in its behalf "in the transaction of any business of the company." The mere grant of power to the mayor to vote does not deprive the city of its right as owner to have the affairs of the company investigated. And his power so to vote may well be an especial reason for desiring such investigation. In this very case, Mayor Johnson was interested in the company on his own account, and it is charged that, by adding the city's vote to that of the stock controlled by him as an individual, he could use great power to the advantage of himself and his confederates, and to the injury of other stockholders, including the city. The other power given to the mayor evidently refers to the ordinary business transactions of the corporation, and for such purposes it is manifestly a convenient and proper provision. But it would need clear words to cut off the city, which is the absolute owner of this stock, from its right to have an official examination of the business transactions and of the consequent position of the company. No such words are in the act. And the Board could not refuse to comply with the request for an investigation made by the concurrent votes of both branches of the city council, and not vetoed by the mayor. Another point was raised as to the proper limits of the investigation and report. It was contended that the Board can only state results in the condition of the corporation, and that it has no right to state how those results were reached. To use the illustration of the able counsel for the respondents: "If the directors had stolen \$5,000, the Board could only report that the capital is impaired to that extent,

but it would not concern the public or the stockholders how the money was lost." Such is not our view. Even if we suppose that the sole object of a report is to show the present value of the stock, the bonds and other securities of a company, that value might be affected by the fact that money had been lost, not by error in judgment or by unavoidable accident, but by a conspiracy of the directors to defraud the stockholders, especially if the directors remained in office, and continued to manifest the same disposition as before.

Our attention is called by the petitioners, not only to the doings of the present board of directors, but also to the acts of the old board, from July 12, 1883. It is only necessary to refer to one of their transactions, viz., the lease of the road. Their votes upon this matter were, in brief, as follows: They leased the road to Mr. Greenough for \$4,950, for seven years; then, after a proposal to lease to Mr. Shaw, they asked the opinion of Mr. Ives (as good a legal opinion as could be obtained). Mr. Ives decided that the lease to Mr. Greenough was binding, and they at once leased to Mr. Shaw. An injunction was obtained, and upon this a vote was passed that the lease might be assigned to Mr. Shaw, and that \$1,000 should be paid to him for a settlement with the lessee, Mr. Greenough. This, on its face, seems to be a bonus paid at the expense of the stockholders for the benefit of Mr. Shaw. And no sufficient reason is given for a transaction so marked by favoritism and improvidence. While the bonus or indemnity paid is not of itself a large sum, it is large as compared with the proper expenditures or the possible receipts of this company.

Before stating the condition of the company under the directors chosen in October, 1883, and commenting upon their action, it is desirable to look at the composition of the board, which consists of nine members. One was Mr. Shepard, who is a partner in the lease with Mr. Shaw, thus holding an adverse interest to that of the stockholders. Mr. Shaw's interest, also, appears to be represented by Messrs. Perley, Dickens and Tilton, who each, just before the annual meeting, received one share from him to qualify them for office, and by Mr. H. G. Johnson, the mayor's brother, who received at that time two shares from Mr. Shaw. One of the directors named is also in the employ of Mr. Shaw. The city clerk, Mr. Stevens, is also a director and owner of one share. Whether Mr. Johnson, the mayor, is a partner in the lease is left in some doubt by the evidence. And upon this point our investigation was necessarily unsatisfactory, for to a long series of questions bearing upon this matter, Mr. Johnson, under advice of counsel, declined to answer; and, as it was evident that answers might tend to criminate him, the Board made no application to the court for power to compel him to testify. All that can be said is, that the testimony strongly tended to show that Mayor Johnson

was an equal partner with Mr. Shaw in the lease. One piece of evidence bearing on their business relations is the fact, that one-third of the shares received by Mr. Shaw, the lessee, from the sale of the stable estate to the corporation hereafter referred to were transferred to Mr. Johnson, and also that they were placed in his father's name without the father's knowledge, and without any consideration from him. This fact, unexplained as it is, tends to show that Mayor Johnson is secretly a partner, with a one-third interest in the firm that operates the road.

The condition of the company under the new board, and its capacity for earning dividends, appear from the sworn return of Sept. 30, 1883:—

CAPITAL AND DEBT.

Capital stock authorized by votes of company,	\$60,000 00
Capital stock paid,	37,500 00
Funded debt (notes due May, 1884, 7 per cent. interest),	24,000 00
Unfunded debt, suspense account,	750 00
Total debt,	<u>\$24,750 00</u>
Cash assets,	486 45
Net debt,	<u>\$24,263 55</u>
Capital as above,	<u>37,500 00</u>
Total capital and net debt,	<u>\$61,763 55</u>

To the amount of debt should be added for interest accrued on the notes up to Oct. 1, 1884, \$700. There had also been voted \$1,000 for settlement with the lessee, as stated hereafter. A contract had been made for repairs of the track at the cost of \$3,300, and a sum exceeding \$5,800 was paid for those repairs by votes of the directors. On the other hand, the company had as an offset land not needed for operating the road, valued at \$1,100. It appears then that the amount of capital stock paid up and of recognized debts as returned amounted to \$60,761.43. To this should be added \$1,750 needed to be raised for full payment of 25 shares, some of which were unpaid and on some of which \$750 had been paid. This was necessary in order to comply with the law, and to relieve the directors from personal liability. As to 200 shares, some doubt existed as to whether they had been legally issued. The directors supposed that these 200 shares must be paid in full to relieve them from liability. But they now regard this as stock which had been properly issued, and which had afterward become the property of the corporation. But these facts as to unissued stock do not affect the amount which represents the liabilities of the corporation, or the amount on which dividends were to be earned. For every dollar paid (and by

law one hundred actual dollars must be paid on each share) would reduce the debt by so much. We have then \$63,950 as the whole cost of the road represented by stock and debts. If we add \$3,300, for which a contract had been made to repair the road, it would be \$67,250, or, deducting for land not needed in operating the road, \$66,150. This represents the whole amount on which interest was to be paid and dividends were to be earned. The road was leased at an annual rental of \$4,950 for seven years, and was to be kept in good repair by the lessee at his expense, after being put in repair by the company. No annual expenditure was needed except for salaries and incidentals. For a small corporation in this condition \$500 would be abundant for this purpose. Here, then, was an assured income sufficient, if the debt could be funded at 6 per cent., to pay over 7 per cent. on the capital stock, if cost of repairs were paid according to contract; and if the whole sum allowed by the directors to Mr. Shaw was paid, still a dividend of $6\frac{7}{10}$ per cent. could be earned. These figures are not met by the fact that no dividend had been paid previously. The possibility of paying is demonstrated by the fact that \$4,950 rent was secured for seven years; and the number of passengers and amount of receipts seem to show that the lessee was not unwise in agreeing to give that rent. And, whether wise or not, he was bound to pay it, and no question is raised as to his responsibility or that of his sureties. And he, being a shrewd business man, and knowing the earning capacity and value of the property better than any other man, was willing to invest largely in the stock of the company at \$50 a share, with the hope of profit. But creditors were pressing for payment of the \$24,000. Individual liability was feared for the directors and a receivership with probable ruin for the company. The natural method of relief was to obtain power to issue bonds and to pay the interest and dividends also from the rent. Even with a considerable loss in negotiating the bonds the stock would have easily paid at least 5 per cent. The company did procure the power, and voted to issue bonds, but they placed an obstacle in the way of negotiating them by a most remarkable transaction. This was the purchase from Messrs. Shaw and Shepard, at an extravagant price, of a stable and other real estate. The price voted was \$21,750. The value did not probably exceed \$7,000, and the treasurer declined to say to the Board that it was so much. There was no pretence on the part of any one that it exceeded \$10,000. The property was immediately let to Mr. Shaw for \$800 a year for seven years, or less than 4 per cent. on the price, while the corporation was struggling with debts drawing 7 per cent. interest, and trying to negotiate bonds at 6 per cent. There would appear to be no good reason for purchasing such property at all; for the company owned no

horses, and had no occasion to own horses or to use a stable, having let its road to be operated by Mr. Shaw until July 1, 1890. The reason given by the directors for making the purchase was the desire to have something to mortgage, in order to secure their bonds. Generally, a mortgage is negotiated in order to enable the mortgagor to purchase; here the purchase was made in order to negotiate a mortgage; and, in carrying out the project, an exaggerated and false estimate was placed on the property. This real estate had been the sole property of Mr. Shaw, the lessee of the road. Just before the sale to the company, he conveyed one-third of it to Mr. Shepard. Then it was conveyed to the company. Of the price, \$20,000 was paid in stock, being the 200 shares which had once been issued to John Gowen as contractor, and which had been returned by him to the company. The statement made in behalf of the directors is, that this stock, which, as they say, was only worth \$50 a share, was issued as full paid stock at \$100 a share, because they did not know whether, as a matter of law, they were selling stock or issuing it; and they wished, if this was an original issue, to avoid the illegality and the penalty attaching to the issue of stock at less than par. Apparently it did not occur to them that, if this was an issue of stock, the penalty of the law was not escaped by putting a false and nominal value on the real estate purchased. Calling the consideration twice what it really was by their own admission is an evasion which the law does not permit. The principle would have been the same if any article of personal property — an old horse-car, for instance — had been bought for \$20,000. And the formal payment of gold and paper for the stock, with immediate repayment for the article bought, does not affect the real merits of the transaction. This form of stock watering is not legal in Massachusetts.

But if the present views of the directors are correct, and if this was a transfer of stock which the company owned and had a right to sell, it should not have been conveyed at a false and exaggerated price, because that has a tendency to mislead purchasers of the bonds secured by the mortgage. Whatever the true value of the shares may be, the directors only valued them then, and value them now, at \$50 each, while they were valued at \$100 each in this transaction. It sold at the time for \$50 a share, and the mayor advised the city to sell at that rate. If it was only worth \$50, then the nominal price of the property, already greatly overvalued, was increased by an additional sum of \$10,000. In considering this transaction, allowance should be made for the fact that the directors acted in a panic, on account of their fear of personal liability. It should be remembered, also, that the credit of the company was not good, and that the contract for repairs destroyed the hope of immediate dividends. But this does not excuse the managers for incurring new liabilities, and further impair-

ing the credit and earning capacity of the road. It is stated in the record that Mr. Shepard, being a joint owner of this property, refrained from voting to purchase it, all the other directors assenting to the vote. But it appears to the Board that he, being not only director and treasurer, but skilled in the law, and likely to influence his associates on legal points, should have stated to them the legal objections that forbade such a transaction. It should have been remembered, also, that the courts have often said that when parties holding a fiduciary relation to others deal in that capacity with themselves as individuals, they must be able to show the most abundant, good faith.

2. It is charged against the directors that, having a contract with Mr. Shaw by which he was bound to put the track into good condition for \$3,300, they allowed him the sum of \$5,882.93 for that service. The explanation given is, that there was more work than was expected, and that it was thought unfair to hold Mr. Shaw to a bad bargain. Undoubtedly trustees and directors may, at the expense of those whom they represent, release a contracting party from a losing contract in a clear case of hardship, and may make him an equitable allowance for unforeseen expenditure; but to justify such action, particularly when so large an amount (about 75 per cent.) is added to the sum bargained for, the equity of the transaction must be exceedingly plain. And this is especially true where the relations between the contractor and the directors are such as exist in this case. One thing is clear, that some of the directors did not know, and some did not care, whether Mr. Shaw's claim was just or not, and this appears to be a case of careless favor on their part toward their associate and employer.

3. The charge of improper settlement with Mr. Northend, and of failure to collect arrears of him, was not pressed by the petitioners; no evidence was offered to sustain it, and the Board considered it as waived.

4. The accusation of an illegal and unnecessary extension of the road to the wharf was not sustained.

5. The charges of illegal issue and sale of stock are sufficiently considered under heading 1. The Board cannot say that the 200 shares were illegally issued, and have already given reasons why they should have been transferred at what was then considered as their true value. The payments of \$1,750 on the shares partly paid up, and on the shares wholly unpaid, were rightly made, and the assignment of those shares was also right. The amount paid for the real estate upon any view of the case was excessive. If the estimate of the Board as to the worth of the stock is correct, it was nearly three times its true value. If the directors' estimate is correct, it was still

excessive, while the price named in the deed and vote was calculated to mislead, because it was over stated.

This disposes of all the charges specified by the petitioners. The balance sheet, as stated by the accountant of the Board, is annexed to this report. It was made up to June 12, but is practically unchanged since. The Board has done all that the law requires, or permits, by investigating and publishing the condition of the company. Our duty ends with publication. If anything further is desired by the city of Newburyport or other stockholders, it must be sought in the courts.

(Signed)

THOMAS RUSSELL.

J. H. CHADWICK.

EVERETT A. STEVENS.

JUNE 30, 1884.

BALANCE SHEET.

Dr.

Cost of road,	\$60,761 43
Real estate and buildings,	22,850 00
Expense account,	5,317 10
Expenses estimated,	3,789 73
Interest account,	1,860 00
Total,	<u>\$94,578 26</u>

Cr.

Capital stock,	\$60,000 00
Notes payable,	24,000 00
Accounts payable (estimated),	1,700 00
Cash due treasurer,	111 12
Due E. P. Shaw on repairs,	2,089 73
Interest unpaid,	1,860 00
Income from lease,	4,804 16
Profit and loss,	13 25
Total,	<u>\$94,578 26</u>

DEBT OF THE COMPANY ON JUNE 12, 1884.

Notes payable,	\$24,000 00
Interest accrued,	1,860 00
Due E. P. Shaw on account of repairs,	2,089 73
Due for incidentals (estimated),	1,000 00
Due state tax for 1884 (estimated),	400 00
Due for rails,	300 00
Total liabilities, June 12, 1884,	<u>\$29,649 73</u>

In addition to the above, Mr. E. T. Northend has a bill against the company of \$2,100, which is offset by a claim of \$1,900 for balance of rent. There are also suits against the company for notes, which, with interest, amount to \$6,000. The company claim that these were fraudulently issued, and deny all responsibility for them.

MEMORANDUM AS TO THE BROCKTON STREET RAILWAY COMPANY.

This company having duly organized with termini in Brockton, and having constructed and operated a track more than two miles in length, have now procured a location in the adjoining town of Stoughton. The question arises whether they can lawfully construct and operate tracks upon this location under their charter.

Such action falls under the letter of sect. 21, chap. 113. The charter has been duly accepted, and the tracks have been located and constructed. These facts, and the authorization of the selectmen, when accepted, are the only conditions of extension. If it is said that one terminus is changed from those named in the charter, the answer is that this is necessary in any extension. The section, under any construction, allows the termini to be changed. Under the strictest construction there can be a change of a mile or ten miles in the original place, but not the change of a rod, if a town boundary is to be passed.

It is true that the section does not, in so many words, authorize an extension into a town not named in the charter. Neither does it forbid such extension; and the general theory of the chapter is that the right of citizens of each town will be guarded by the municipal authorities. "The object of the statute was to delegate to the local authorities of the cities and towns the power of authorizing and controlling the location of street railways within their limits, and to obviate the necessity of an appeal to the legislature whenever it is desired to establish a new street railway, or an existing company desires to locate additional tracks." (South Boston Railroad *vs.* Middlesex Railroad, 121 Mass. 485-489.) And while that case is not precisely in point, it gives a construction to the words of the statute quite as liberal as that needed to sanction the proceedings of the Brockton Company. An "*extension*" of tracks which leaves a gap between the old and the new tracks of the company is a more liberal use of the word than that which authorizes a continuous track crossing a town boundary.

As a matter of public policy, nothing is gained by requiring the organization of a new company, with subsequent proceedings for consolidation.

The analogy of branch steam railroads seems to favor the view here taken. The original termini fixed by the charter may be carried within or beyond the town limits. The proceedings by which an association is formed and organized into a corporation need not be renewed. The proceedings for acquiring a location over the new route are those appropriate to steam railroads. So in this case, the charter is already acquired, and the proceedings by which a location is acquired follow the general rule of street railways. While the question raised can only be decided in a court of law, the Board has no hesitation in stating that there appears to be no legal objection to the action of this company.

THOMAS RUSSELL, *Chairman.*

MARCH 20, 1884.

SALISBURY BEACH RAILROAD ASSOCIATION, PETITIONERS FOR A CHARTER CERTIFICATE.

Various legal objections were urged to the granting of this petition. (1) That the names of the subscribers were not published and posted under sect. 37. This objection is overruled. 1. The statute does not call for publication of the subscribers' names, but for "a copy of the articles" which they have signed. 2. In sect. 35 the subscribers are required to sign the articles. But if their names are part of the articles, they must sign twice. This would be an absurd requirement. The word "articles" means the same in sect. 35 and in sect. 37. 3. The Board has ruled on this point more than once, and in the case of the Nantasket Beach Railroad Company the question was carried before the judge of the Supreme Judicial Court by able counsel, and his ruling, sustaining that of the Board, was acquiesced in.

(2) By sect. 38 a profile of the route on a vertical scale of 10 to 1 is required. Here it is not given, and no statement is given by the engineer on the map to account for the absence of such a profile. This is fatal, as the requirement is absolute.

(3) The route as delineated on the plan, in fact, crosses one highway, and crosses tide-water in one place. But the map does not show either of these facts, nor the manner proposed for crossing the same. These are fatal defects, and it is doubtful whether an amend-

ment can be allowed. For the statute requires proceedings under sects. 34-38 before application can be made under chap. 265, 1882. These proceedings have not been had. The petition is dismissed.

By the Board.

THOMAS RUSSELL, *Chairman.*

APRIL 28, 1884.

APPLICATION FOR A CERTIFICATE OF EXIGENCY FOR THE MEIGS ELEVATED RAILWAY.

On the application of the directors under the articles of association to form the Meigs Elevated Railway Company for a certificate that public convenience and necessity require construction, the legislature has left little for this Board to decide. Nothing is before us at this time except the question whether better facilities are needed for the transportation of passengers between Boston and Cambridge, and whether within three miles of the State House such facilities shall be afforded by the use of steam. If they are needed the legislature has determined that they shall be furnished by Mr. Meigs and his associates, and furnished according to his method. To insure this the unusual precaution has been taken of forbidding another method by name; and as a further security a copy of Mr. Meigs' plan must be filed with the "Secretary of State," so that it shall be followed in constructing this road.

The testimony shows clearly the need of improved transportation between the two cities; and no other motor than steam is proposed or practicable on the contemplated road. The Board, therefore, grants the petition and certifies that public convenience and necessity require the construction of a railway as proposed in the articles of association aforesaid. And the Board also consents that any part of said railway situated within three miles of the State House may be located and constructed.

By the Board.

Attest, WM. A. CRAFTS, *Clerk.*

JUNE 6, 1884.

MEMORANDUM OF RULINGS ON APPLICATION OF THE BOSTON & LOWELL RAILROAD COMPANY FOR A CERTIFICATE OF EXIGENCY FOR EXTENSION OF WOBURN BRANCH.

Testimony as to the need of grade crossings and the practicability or impracticability of constructing the road without such crossings is admissible as bearing on the question of exigency. "Public convenience and necessity" may require the construction of a railroad where no crossing at a level is needed, and the needs of the public may not require it, where dangerous grade crossings are inevitable, although the amount of traffic may be the same in each of the two cases. In deciding a question of public necessity and convenience, there is generally a balance to be struck between convenience and inconvenience. The amount of inconvenience caused by railroad construction depends largely upon the number and nature of the probable grade crossings. For example a slight amount of traffic might create an exigency for a railroad over the level and unfrequented plains of Nantucket, while an immense amount would be needed to justify certificates for the construction of a railroad which would necessarily cross the most crowded thoroughfares of Boston at grade. Testimony as to the necessity of grade crossings, and of their dangerous character, is admissible, as tending to show that there is no such exigency as to justify the proposed road; and testimony that a route free, or comparatively free, from the need of such crossings is admissible, in favor of the application.

At this hearing, the Board can give no decision as to the question of allowing grade crossings. It is not and cannot be before us.

1. No route has yet been fixed, nor could any have been fixed. We cannot assume that the selectmen will agree with the railroad company on any route requiring grade crossings.

2. Still less can we assume that the county commissioners will adjudicate in favor of such crossings. This Board, under sect. 123, chap. 112, has no jurisdiction of that question, until the county commissioners have passed upon it, and decided in favor of grade crossings. If they decide against it, the Board cannot entertain the question.

3. At present this Board, while a vacancy exists, would be very slow to intimate an opinion on any subject, which should be expected to bind its members when the Board is full. And if it should at any time undertake to decide a like question in advance, it might be giving an opinion, which the Board, when the question actually arose, might repudiate.

[I.]

NOTES ON TELEGRAPH LINES.

NOTES ON THE SUBJECT OF UNDERGROUND AND OVER-
GROUND LINES OF TELEGRAPH LOCATED ON ROAD
AND RAILWAY FOR COMMERCIAL WORKING.

The objections to having a number of independent telegraph lines established on a railroad location are: the amount of space taken up by the wires, the interference with the sight of signals and the liability of broken poles causing accident to trains.

The proper distance from track at which telegraph poles should be placed for railway working is the line of the right of way. For independent working it is the line of the nearest road.

The limit of the extent to which wires can be laid underground is simply a question of insulation, *i.e.*, an insulation which will not retard working, and at the same time prevent interference. Underground wires should be so insulated that no moisture should penetrate the outside covering; it should be reasonably decay proof, water-proof and fire-proof; it should not carbonize or corrode the conductors. The insulation should be low but the conductors well separated and kept clear from all atmospheric influences as well as from the earth. Underground wires are largely used in other countries. London has nearly a complete system, and in Germany there are 221 cities connected together; 3,400 miles in all of underground, containing 23,000 miles of wire. The cost of the German system was \$2,639 per mile of 21 wires, placed in pipe and buried at a depth of four feet. This includes labor, material, etc., all ready for use.

Sectional boxes can be laid for \$2,000 per mile, sufficient to accommodate several hundred wires.

Brooks' cable system laid through pipe filled with oil, containing from three to four hundred wires, can be placed at a cost not exceeding \$20 per line per mile ready for operation.

The objections to the underground are: the liability of causing retardation, causing slow transmission of messages, and the trouble and expense in making repairs.

An eminent English authority on the subject of telegraph lines notes : Where there is a choice between an overground and underground system there should be no hesitancy in selecting the former, for not only is the first cost less, but faults occurring upon them can be more readily traced and rectified ; but that where there is a choice of location for an overground independent line of telegraph between a road and railway, they both offer advantages and it is no easy matter to say which is to be preferred.

The first cost of a line located on a road is greater than upon a railway, but yet its subsequent maintenance under certain conditions is less ; the supervision of it is more perfect, for the fact that the poles are erected along the side induces better inspection and little imperfections are thus easily detected.

On a railway location walking is difficult and consequently too often neglected, the lineman contenting himself with travelling by train, from which close inspection is next to impossible.

The reparation of faults is as a general rule more speedily carried out upon roads than upon railways. In case of the former, the lineman can start immediately the fault is reported to him ; with the latter he has not only too often to wait some time for the starting of a train, but frequently is carried past the fault and has to return to it many miles on foot.

For an underground system carrying wires between cities, *i.e.*, outside of street limits, following a railroad or turnpike, a conduit alone can be laid for \$1,580 per mile, capable of holding 50 wires. The wires with good insulation will cost \$105 a mile each, if separate ; if by cable carrying 10 or 15 wires each, the cost would not exceed \$85 per mile for each conductor.

Taking this as a basis, a system with provision for carrying 50 wires, with 15 laid in place, would cost, all complete, \$2,855 per mile.

In cities, within street limits, the cost of labor to be added to the above depends on the location with respect to pavement or street, but in any case would not add more than \$500 per mile to the above. Cross lines leading to houses are not included.

REPORT FROM MR. HAMILTON

As to Western Union underground wires in New York City (there being practically no other underground system), from General Office to Pier 18, two parallel pipes of 2,031.50 feet.

4,063 ft. iron pipe, at 20c. per ft,	\$812 60
Coating 130 pipes, 1,251 ft., at 3 cents,	37 53
Carting,	8 00
Laying (two 1,850 ft. parallel) 3,700 ft. of pipe, two pipes in trench, at 22½c.,	832 50

Setting and cutting 4 flush boxes (test boxes),	\$72 00
Laying and furnishing stone for 60 yards Belgian pavement, at \$2.25,	135 00
Elbows, iron work, etc., at cable house (Pier 18),	50 85
Extra labor, etc., at and around Pier 18,	60 50
Cable house at Pier 18, N. R., invoice by G. M. P.,	160 25
	<hr/>
	\$2,169 23
	3,424 15
	40 01
	<hr/>
	\$5,634 29
Two cables of 2,130 ft. each, or 4,260 ft. (30 conductors cable), .	\$3,400 15
	24 00
	<hr/>
	\$3,424 15
Labor of drawing in {	
Hanging and fixtures,	\$15 30
Labor,	22 61
Other expenses,	3 00
	<hr/>
	\$40 91

In the latter part of 1876 or early in 1877, two 30 conductors cables (about 2,200 feet each) were laid from the General Office, 195 Broadway, to Pier 18, North River.

Eight or more conductors in one of these cables failed before the end of 1880. These were repaired about October, 1881, by drawing in a new piece in place of the defective portion.

Seventeen conductors in the other cable failed in November, 1880, by breakage of iron conduit under the dock. Overhead wires were substituted until April, 1881, when this cable was replaced by a new one containing 60 conductors.

At the present time 3 conductors are interrupted, 57 good.

The remaining 30 conductors cable was extended to Pier 16, in February, 1882. It was afterwards replaced by another of 60 conductors.

At one time 20 conductors by this route were interrupted by the heat from the Steam Heating Company's pipes, but I am unable now to say whether it was the 30 conductors before its replacement, or the 60 conductors cable.

At the present time 4 conductors are interrupted, 56 good.

A 12 conductors cable 22,000 feet long was laid between the office, 195 Broadway, and 14 Broad Street, in October, 1876; cable destroyed in October, 1883, by steam pipes.

Has not been replaced.

A 28 conductors cable, 2,050 feet long, was laid May, 1880, between 195 Broadway and 8 Broad Street; 11 conductors failed November, 1882. Cause, steam pipes.

Eight conductors working now.

A 30 conductors cable, 500 feet long, was laid between 134 Pearl Street and the Cotton Exchange, in May, 1882. At present time 2 conductors are defective, 28 good.

A 60 conductors cable, 2,778 feet long, was laid between 195 Broadway and 134 Pearl Street, in May, 1882. Failed November, 1882. Cause, steam heating. Cable has been abandoned.

A 30 conductors cable, 730 feet long, was laid in Jersey City, December, 1876. Failed October, 1882. Cause, exhaust steam pipe passed underground new cable, melted gutta percha.

Repaired soon after, and an additional cable put down. All conductors all right at present time.

A 30 conductors Brooks' cable was laid between Newark and Jersey City suburb in 1880. The wires failed rapidly when put in service. This cable was afterwards repaired, part of the route changed, and considerable new cable added or substituted for defective portions in 1882. It saw scarcely a year's service, however, and none of the conductors are now in use. The experiments with this cable were made at an expense of more than \$20,000.

MAY 27, 1884.

GEO. A. HAMILTON,
Electrician.

REPORT FROM MR. D'INFREVILLE, ELECTRICIAN.

Underground wires are used in Paris, where there is a complete system of spacious sewers, and in London, where there are subways. They are also used in France and Germany as an adjunct to overland wires, to insure communications in case of storms in time of peace; but have been built especially in view of better securing official communications in case of war. None of these cities, however, I am informed and I believe, have such a number of wires as New York. In London, overhead wires are fast multiplying, and they are also used in Paris suburbs; and since hard drawn copper wires will gradually come into use, and are much thinner than iron wires of same conductivity, much of the inconveniences of the latter will disappear.

They offer generally from three to five times, according to the cases, as much difficulty to the transmission as overland wires.

Underground wires are generally more costly and troublesome to repair; the faults, in order to be detected, require electricians with testing instruments; they cannot be detected at all times, and some-

times not exactly, and the repairing requires a special staff of men more difficult to find and more expensive than the ordinary staff.

Should the Western Union Telegraph Company be obliged to use its quadruplex from New York, for instance, to Chicago (which is done now by using repeaters at Buffalo), through a circuit composed partly of overland sections and partly of underground sections (underground sections in each city like Rochester, Syracuse, etc.), the quadruplex transmission which is already sometimes difficult, might become impossible, and the speed of the automatic system now in use by the company would be more or less reduced.

The prospects of improvements are very poor. The dynamic induction, or practically the interference of signals between wires, can be eliminated, though, by increasing the static induction or retardation of signals, against which no sufficient remedy has been yet found.

The *Electrical Review*, a prominent scientific paper of London, in reviewing the last electrical exhibition in Philadelphia, says (p. 277, Oct. 11, 1884) : "Conduits are very numerous in the exhibition, and as a general rule are the reverse of practicable inventions."

I append hereto some correspondence, reports, etc., bearing on this general subject, which will be found of interest.

GEORGES D'INFREVILLE,

Electrician of the Western Union Telegraph Co.

NEW YORK, October 29, 1884.

PHILADELPHIA, March 13, 1882.

JNO. VAN HORNE, Esq.,

Vice-President, Western Union Telegraph Co., New York.

* * * * *

There is a general impression that all telegraph wires are underground in European cities. It is not so in a general sense; but if I were to say that there are no telegraph poles in the streets of European cities, it would be true in the same sense.

In year 1879, I was engaged to lay underground wires in Belgium and France. The place selected by the government in Belgium was in the city of Bruges. Bruges has about 50,000 inhabitants; there is but one telegraph office, and that is at the railway station. I laid a cable from the railway station on the line of the railway towards Ostend. There are no underground wires in Bruges except those I laid. There are on an average 5,000 English people in Bruges. I am quite familiar with the telegraph office and business of Bruges, also that of Trenton, which was for a number of years under my direction. The government of Belgium does not deem it necessary to

extend wires to the hotels and business centre of Bruges, and the citizens of Bruges are obliged to go to the railway station to send their telegrams, farther than the average of the citizens of Trenton would have to go were they obliged to hand in their messages at the station of the Penn. R.R. The city of Ghent, with 120,000 inhabitants, and covering a much larger space than Bruges, has but one telegraph station, and that is at the railway station. There are no underground wires in Ghent. Antwerp, one of the largest commercial centres on the continent, has but one telegraph office besides that at the railway station, and that is about midway between the railway station and the business centre of the city. Brussels, a still larger city, has but one telegraph office besides those at the railway stations, and the principal telegraph office is at the station du Nord. A much smaller branch office is established on the hill in connection with the post-office. The amount of underground cable in Brussels and Antwerp is comparatively very small. The underground cable that I laid in France was in the city of Versailles, and that is the only underground telegraph in that city. There is but one telegraph office there also, and that is within a few yards of the railway station. This office is in the Ave. de Paris, and the wires are carried from the railway on poles standing in this avenue. There are very few underground wires in Paris; the overhead wires terminate at the different railway stations, and are then run under ground to the Central Telegraph Bureau, Rue de Grenelle. The number of wires in the sewers are sufficient to continue the circuit of the overhead wires to the central station. Nearly all of the telegraph business is gathered in the city of Paris, and taken to the central station by means of pneumatic tubes, and by this same means distributed from the central station. Similarly the business of London is brought to the city as far as the railway stations, and is then conducted under ground by means of gutta-percha insulated wires to the central station, St. Martin Le Grand. The gathering and distribution of the city of London is carried on almost entirely by a system of pneumatic tubes radiating some two miles from the central station in St. Martin Le Grand, which is near London centre as it existed a century since. But the centre of population at the present time is nearly a mile westward in the neighborhood of Charing Cross. There is a telegraph office in the Strand, opposite Charing Cross, that receives and delivers probably as large a business as any other branch office in the city, and a much larger amount than is received and delivered at St. Martin Le Grand. In this office there is neither wire nor instruments; the entire business is transmitted to the central station by pneumatic tubes, and also received from the central station and delivered by means of these tubes. Within a few yards of this telegraph station is the Grand Hotel, Charing Cross

Hotel, Morley's Hotel, the Golden Cross Hotel, four of the largest hotels in London, and within the same radius at least ten other hotels. All the telegraph business of this locality is received and distributed by means of the pneumatic system, and it is probably one of the greatest, or the greatest, telegraph centre in the world.

The object of this statement is to show that the number of underground electrical conductors in the cities of Europe is much less than is generally supposed.

Germany has laid a system of underground conductors from Berlin to the frontiers of the empire; they are more for military purposes, or to serve in case of military exigencies, than for ordinary commercial purposes. France, for the same reason, laid a cable of five conductors from Paris to Nancy last year, near the German frontier. I was informed last summer, by the French telegraph engineers, that they were unable to get more than about one-third speed through this cable on account of static charge, and this is done by connecting the cable to the earth between signals. The cost of these conductors is stated to be about seven times that of the overhead lines. Gutta-percha is used in this country for river crossings. It is generally imported; the duty on these conductors is 45 per cent. when insulated with gutta-percha, and the duty on gutta-percha, the raw material itself, is the same. There is no economy in getting the cables manufactured in this country. Gutta-percha insulated conductors, it is safe to say, would cost ten times as much as overhead wires in this country; the latter cost about the same here as in Europe; wire is dearer here, but timber suitable for poles is very much cheaper. If the Western Union Company are compelled to bury their wires now placed upon poles in the streets of Trenton, the expense would not justify them in so doing, and the citizens of Trenton would be obliged to go to the railroad station to have their dispatches transmitted, and this statement will apply to every other town or city in New Jersey, and it will also apply to every city in the State of New York except the city of New York itself. To place all the wires underground in cities in the States of New York and New Jersey in one year's time would be an impossibility. Laying of underground cables requires a large amount of skilled and expensive labor; joints have to be made by professional "joiners," and tested with galvanometers by those who are skilled in their use. I do not think that twenty such persons can be found in America.

* * * * *

I have every reason to believe that the great quantity of poles and wires, that are now so objectionable in our streets, may be dispensed with in future; and while the company is so earnestly engaged in testing this problem of underground wires, I can see no good result

to be gained by the passage of these bills. It will be to their interest to make an underground system whenever it is practicable. So far concerning the Western Union Telegraph Company. I will now refer to the telephone system. An ordinary telephone conductor costs about one-third that of the ordinary telegraph conductor. The telephone companies use a light, cheap wire, and their principal supports are upon house tops, involving comparatively small expense. But a telephone conductor, when placed under ground, costs about the same as an ordinary telegraph conductor. If those using the telephone are obliged to place their conductors under ground, the citizens will not be able to afford the use of one telephone, where they use a hundred now. Four years since there was scarcely any overhead wires to be seen in European cities, but since the use of the telephone, Antwerp and Brussels have but a little better appearance than American cities, and that applies to London, and almost all other cities in Europe. The people complained of the nuisance there, and wanted the government to interfere or stop it; but so long as property owners will allow them to attach wires to their buildings, these telephone companies will thrive. If they are obliged to go under ground, it would result in a prohibition to the telephone companies, and a most serious injury to the business of the public. With regard to the electric light, the electric conductor is so short, and the dangers attending those wires, both to life and property, when stretched overhead so great, that those who cannot afford to place those conductors under ground had better use gas.

Very respectfully yours,

DAVID BROOKS.

PARIS, March 20, 1882.

JOHN E. HUDSON, Esq., 95 Milk St., Boston.

Dear Mr. Hudson:—In regard to underground system, as inquired for in your letter of Feb. 21st, I have given the matter thorough attention here. In Paris, and in the other French cities that have a similar system of sewers, it is an unqualified success, but as far as I have been able to determine, nothing whatever has been done elsewhere in Europe to use underground wires for telephonic purposes, the wires being run on poles and over houses, precisely as in America.

In Paris the sewer system extends to every part of the city, and all the wires excepting a very few run through them. In the other French cities, Havre, Bordeaux, Nantes and Lille, the sewers are not so extensive, and consequently the wires are not all underground, one-third or one-half of them being overhead.

* * * * *

Of course the sewers play an important part in this underground system, chiefly in making the laying of the cables wonderfully simple and easy.

You, of course, know that the sewers in Paris are in all cases large enough to walk upright in, and in many cases large enough to drive a loaded team through, and as nothing but water ever enters them, the air is as sweet as in an ordinary cellar.

They contain not only the telephone and telegraph wires, but all the water and gas pipes and pneumatic tubes, and there is plenty of room for all the telephone wires that Paris will ever need.

There are at present 1,500 subscribers, and I should judge that they used their instruments about the same as in an American city.

* * * * *

Very truly yours,

THOS. A. WATSON.

EXTRACTS FROM COMMUNICATIONS FROM THE SECRETARY OF WAR TO THE SENATE, 1884.

REPORT OF COL. ROCKWELL.

* * * * *

The original object of the tests was to determine the practicability of removing the present unsightly wires and poles of the departmental telegraph, which at present not only disfigure the public buildings and grounds, but are a perpetual source of danger, annoyance, and expense; and the substitution therefor of an underground line, which should perform the service required, at least as well, if not better.

These tests and experiments have been numerous and thorough. They were conducted during a considerable period of time and by a large number of persons. The detailed results interesting and important, are embodied in the various letters which accompany this report, and to which especial attention is invited. (See inclosures A to Q, inclusive.) Their weight and value will be duly estimated, not only by the scientific attainments, but the practical experience of some of the writers. From their consideration, and from my own observations, and frequent participation in the tests and practical working for both telegraphic and telephonic purposes, I express the opinion that the experimental cable laid by the Standard Underground Cable Company, fulfils all the requirements of the service as an efficient and practical substitute for the present overhead system.

I have the honor, therefore, to respectfully recommend the adoption of the cable system for the departmental telegraph line, and its extension to include all the departments of the government in this

city so soon as practicable, and, thereafter, the removal of all aerial wires and poles, from the public buildings and grounds.

It will be observed that in the conduct of the various tests and experiments, not only the telegraph, but the telephone has been used. The manifest advantages of the underground system for telephonic uses are fully set forth in the accompanying letters, and I venture to suggest the expediency of the introduction of a departmental telephonic service in connection therewith.

* * * * *

Very respectfully, your obedient servant,

A. F. ROCKWELL,

Colonel United States Army in charge.

Inclosure B.

[PROF. G. F. BARKER TO COLONEL ROCKWELL.]

UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, April 21, 1884.

SIR:—While in Washington last week I examined somewhat carefully the underground cable now working in the streets of that city, made, as I understand, under patents held by R. S. Waring, of Pittsburgh. In my judgment, the theory of this cable is scientifically sound. Its anti-induction feature consists in the use of metallic screens between the wires—a device the effectiveness of which was first pointed out by Professor Henry. Protection from leak is secured by excellent insulation. In practice the cable seems to answer all requirements. Conversation was readily carried on over circuits 2.6 and 4 miles respectively, and this with various forms of telephone. A remarkable freedom from extraneous noises was observed, the articulation, in consequence, being sharp and clear. I made a test of the insulation-resistance of this cable, using for this purpose the section which extends from Seventeenth street and Pennsylvania avenue to the Capitol, a length, as I was informed, of 2.6 miles by the route taken. The instruments employed in the measurement were those in use in the office, and the results, therefore, can be considered only approximate. It appears from this test that the cable-insulation had a resistance of between two and three hundred megohms per mile.

Abundant evidence is at hand that the working of the telegraph lines through the cable is in every way satisfactory. Tapping of wires being impossible, secrecy is assured. The retardation predicted of underground cables has not in any case been noticed.

The Waring cable, therefore, both by its excellent insulation, its protection from induction, and the facility with which it may be manufactured and laid, admirably fulfils the requirements of a first-class underground conductor.

Respectfully yours,

GEORGE F. BARKER.

Col. A. F. ROCKWELL.

Superintendent of Public Buildings and Grounds, Washington.

[C. F. L. BRAULIK TO COLONEL ROCKWELL.]

HOUSE OF REPRESENTATIVES, WASHINGTON, D. C., April 4, 1884.

SIR:—I beg leave to report on the "Waring" underground cable connecting the House of Representatives with the various Executive Departments of the government by telegraph and telephone.

This system has been in daily use for several months and has operated to perfection, not having failed in a single instance since its introduction. It is far superior to the old system of air lines. I cannot see how we could now do without it; the air lines having frequently failed us, we are entirely dependent on the underground wires.

The extension of this system to all departments of the government in this district would greatly facilitate business.

Respectfully yours,

CLARENCE F. A. BRAULIK,

Manager Government Telegraph Lines, House of Representatives.

Col. A. F. ROCKWELL,

Superintendent Public Buildings and Grounds.

DEPARTMENT OF STATE, WASHINGTON, April 12, 1884.

* * * * *

The underground Morse system of telegraph connecting the State, War, and Navy Departments, the White House and Capitol and Office of Public Buildings and Grounds, has been in constant operation for some time, and has worked admirably. This line is of course entirely free from all atmospheric disturbances and weather troubles, and is therefore always ready for use. The only drawback in its use is that less than one-half of the offices of the general government are embraced in the cable system, and when the air lines are down it becomes necessary for some of the offices having the underground wires to repeat business for those points not so provided.

A general extension of the underground wires would certainly prove advantageous, and could not fail to greatly facilitate the Government telegraph service.

Yours, respectfully,

THOMAS MORRISON,

Manager State Department Telegraph Office.

Col. A. F. ROCKWELL,

Superintendent Public Buildings and Grounds.

Inclosure M.

[C. O. PIERSON TO COLONEL ROCKWELL.]

WAR DEPARTMENT, WASHINGTON CITY, April 12, 1884.

SIR:—I have the honor to state that the Standard Underground Cable system, as worked from this department, has proved a great success, and has at all times and under all circumstances maintained the highest efficiency known in the history of the construction of electrical circuits.

Our "Morse" system, which connects the War Department with the United States Senate, House of Representatives, White House, State and

Navy departments, and Office of Public Buildings and Grounds, has worked to perfection, and cannot be too strongly indorsed. Since its introduction in the Department, some three months since, it has never failed in a single instance, and has on numerous occasions been the only outlet between this point and the Capitol. This office has repeatedly relayed the Capitol business through the underground system to such points as could be reached by the air lines when communication by the latter route has been interrupted to that point. Its extension to and introduction in the other Departments would greatly facilitate the transmission of public business by telegraph. Of the many telephonic tests which we have had through this system it can be said, as to the conductivity of the cable, that they have been absolutely perfect, the cable being entirely free from induction, which is one of the greatest sources of interruption of telephonic communication. The electric clock circuit, as worked through this system, which controls the electric clock in the United States Senate, and which is controlled from this office, also works admirably.

We have also working through the "Waring" cable a loop to the Capitol, connecting at that point with the Baltimore and Ohio telegraph system, through which this Department is placed in direct communication with Chicago, St. Louis, and other points, which is working in the most satisfactory manner.

Very respectfully,

CHAS. O. PIERSON,

Manager War Department Telegraph Office.

Col. A. F. ROCKWELL,

Superintendent Public Buildings and Grounds.

I now invite attention to an estimate for a comprehensive system of telegraph and telephone for the Government service in Washington on the "Waring" underground system.

* * * * *

Line.	Ditching and Boxing.	Number of wires.	Total wire.
	<i>Linear feet.</i>		<i>Linear feet.</i>
From Capitol to navy-yard,	7,250	6	43,500
From Capitol to Government Printing Office,	3,150	12	37,800
From Patent Office to Pension Office,	1,500	12	18,000
From Patent Office south to north B street,	2,300	12	27,600
From Armory Building to National Museum,	1,120	12	13,440
From National Museum to Smithsonian Institution,	420	12	5,040
From Smithsonian Institution to B and Ninth streets N. W.,	1,500	12	18,000
From B and Fourteenth streets N. W., south to Bu- reau of Engraving and Printing,	1,830	12	21,960
From Fourteenth street east to Department of Agri- culture,	300	12	3,600
From East Executive avenue to Treasury and De- partment of Justice,	1,100	18	19,800
From main trunk to Executive Mansion,	200	6	1,200
From New York avenue and Seventeenth street N. W., to Naval Observatory,	4,600	18	82,800
From Seventeenth and G streets N. W., to Signal and War Records Offices,	1,650	6	9,900
From Fourteenth street S. W., to United States Greenhouses,	750	2	1,500
One six wire cable, exclusively for telegraph busi- ness, as shown in red on "wire-diagram" B* of herewith,	13,728	6	243,888
Total,	41,398	—	548,028

At the prices submitted by the "Standard Underground Cable Company," this would amount to the following: Ditching and boxing, 41,398 feet, at $18\frac{1}{2}$ cents, \$7,658.63; conductors, 548,028 feet, at 6 cents, \$32,881.68; giving an aggregate cost of \$40,540.31 for the "Waring" cables laid down ready for use.

There has been received an estimate from the "Averell Insulating Conduit and Telephone Company," of Washington, D. C., which, being imperfect in details, is submitted in the following extract:

I have to state that a prism 1 foot square in cross-section, carrying one hundred conductors of No. 14 copper, can be laid at an average price not exceeding \$8,000 per mile, or not exceeding \$80 per mile per wire.

The variable elements in this estimate are: The character of the required excavations, the size of the conductors, their number, and kind of metal used in them. No. 14 copper wire is equivalent in conductivity to No. 8 galvanized, and costs less.

The price per mile per wire will be diminished or increased in proportion as the number of wires required is greater or less than one hundred. The charge for maintenance, insurance, and royalty on each wire per mile will not exceed \$20 per annum.

Cost of Instruments.

The only proposition for the sale of telephones to the Government is made by the "Washington Telephone Company," of Washington, D. C. (controlling the Rogers patents), at the rate of \$40 per set, which, as there are two hundred and fifteen instruments required, would give a total cost of \$8,600. There will be required eight switches at an estimated cost for purchase of \$1,350.

* * * * *

A. F. ROCKWELL,

Colonel United States Army, in charge.

Brig. Gen. JOHN NEWTON,
Chief of Engineers, U. S. A.

REPORT OF SIR WILLIAM THOMSON.

Since the completion of our report, a letter from Sir William Thomson has been published, which gives the latest and most trustworthy views upon underground telegraphy, and we therefore take pleasure in adding a somewhat abbreviated copy to this note. As an answer to the questions whether underground wires can be worked, and whether they will be durable, Messrs. Siemens recommend an underground cable similar to that which is used by the German government. This cable contains seven copper strands, each weighing 90 pounds per mile, and insulated with gutta-percha weighing 76 pounds per mile.

The seven insulated wires are contained in a sheath of 24 galvanized iron wires, each 0.102 inch diameter. The weight of the iron is about 4,080 pounds per mile. These iron wires are farther protected by jute and compound. The weight of the whole cable is about 6,100 pounds per mile. Its breaking strength is four and a half tons. This type of cable is well suited for the purpose to which it is applied.

Experience has shown that cables of this description buried in the ground without further protection are extremely durable, and are exposed to very few accidental injuries. We are unable to fix a term to the life of these cables, because up to the present time no similar cable has, we believe, required renewal or shown any sign of serious injury. These remarks apply both to the iron sheathing and the gutta-percha core. No insects have, as far as we know, attacked the gutta-percha in these or similar cables, either in this country or in any other. The experience in temperate climates has been large, and some very considerable lengths have been employed by the German government to form a network of lines for military purposes. In hot countries some experience has been derived from short lengths of cable used in trenches on land to connect submarine lines with land stations. In some cases extreme heat has injured these short connecting lines, but we believe that this has occurred only where proper trenches could not be dug for their protection. We are, therefore, of opinion that, as regards durability and freedom from accidental interruption, underground cables would give very satisfactory results.

The transmission of messages through underground wires is subject to two actions which tend to limit the number of signals which can pass from station to station in a given time. The name induction is commonly applied to both these actions, which may be distinguished one from the other, as static induction between the copper conductors and the earth, and magnetic induction between adjacent insulated wires. We believe that in all cases likely to arise in practice magnetic induction may be neglected, and, moreover, its effects can in some degree be neutralized by judicious arrangements. The effects of static induction cannot be eliminated by any known contrivance. The well known limitation of speed through submarine cables is due to static induction, and a similar action takes place in all underground wires. Formulæ derived from submarine lines enable us to calculate with considerable accuracy what traffic can be passed through long underground lines of a given type when these are worked with the same expensive instruments as are employed for submarine lines. Thus, with the type of cable described above, we reckon that by using the siphon recorder, or mirror instruments, a good clerk would work at his full speed sending from 20 to 30 words per minute through any length not exceeding 1,000 miles. A high

class of clerk would, however, require to be employed, and it is possible that magnetic induction from wire to wire would in these great lengths be inconvenient. We do not believe that transmission by underground lines in this manner would be likely to compete on favorable terms with transmission by overhead wires. It has therefore been our duty to satisfy ourselves as to the traffic which could be carried on by ordinary apparatus through the underground lines. Experiments give the following result:

Length of Line. Miles.	Words per Minute.
27	More than 220
88	130
116	100
181	35

On the length of 181 miles a similar experiment was tried with hand sending and a Morse sounder as the receiving instrument worked by a relay; 30 words per minute were sent, and probably the full speed of 35 words could have been reached by a good clerk. The general conclusion is that for short lengths, such as 30 miles, extremely rapid sending by automatic instruments might be employed, and duplexing, or even quadruplexing, might be employed. On lines of 100 miles automatic instruments could still be employed with advantage, but the effects of static induction would be quite sensible and would render any speed greater than 130 words per minute difficult of attainment. The ordinary hand signalling could be practised with no sensible impediment on all lines under 200 miles in length, and at this distance relays could be worked retransmitting the messages automatically, so as to connect places distant from each other by at least 500 miles. There is no doubt whatever that any amount of traffic could be worked through a system of underground wires at the usual rates of hand sending.

The expense of establishing underground cables must always be greatly in excess of the cost of aerial lines capable of transmitting the same amount of traffic. But in cost of maintenance, we believe that an underground system would compare very favorably with aerial lines. Underground wires will also be almost wholly free from interruptions due to storms or to extremes of heat and cold, whereas aerial lines, however well constructed, must always be subject to injury from wind, snow and extreme cold.

We have heard it suggested that lines composed partly of underground wires and partly of suspended wires would be more difficult to work than lines constructed wholly on the one or the other system. This is an error. It is, however, perfectly in accordance with the

theory that the addition of any considerable length of aerial wire to a long underground circuit will materially reduce the speed of working. The reduction in the speed will, however, be less than if the length of line added were also composed of underground wires. Thus, in the experiments already spoken of, an addition of 50 miles of aerial line to the 181 miles of underground line reduced the speed from 35 to 28 words per minute. But if an additional length of 50 miles of underground wire had been added, the speed would have fallen to 15 words.

REPORT FROM THE BOSTON & ALBANY R.R. COMPANY ON FALLING OF TELEGRAPH POLES AND WIRES.

Boston, March 31, 1884.

Division No. 1., Sect. 1.—Sept., 1869, half the poles, south side, between Providence Crossing and Cottage Farm blown upon track. July, 1879, poles blown across track at Cottage Farm and Newton. Feb. 28, 1884, poles at Columbus Avenue fell across tracks. Two weeks later, at same place, pole struck freight train.

Grand Junction.—At Chelsea, 1881, man named King cut in mouth and thrown down, and afterward died.

Main Line, Sect. 6.—In 1873, at Wellesley Hills, three or four poles, north side, knocked over track by trees falling against wires. In 1876, at Hubbard's Crossing, a rotten pole fell across track. In 1877, a pole fell across Newton Lower Falls track.

Sect. 8.—In 1880 a pole blew across track near 16 M. P. In 1881, in the spring, a pole, north side, near 19 M. P., leaned over, threatening engines. In 1882, at Lake Crossing, a pole, south side, broke and fell toward track. Every spring leaning poles have to be righted up. In 1868, in March, a leaning pole took off smokestack, near 19 M. P.

Saxonville Branch.—Last fall, 1883, at time of inspection, a pole fell towards track; No. 205 engine ran into wire and was damaged. One month ago a tree blew down and broke down wires.

Sect. 9.—In 1873, April 1st to 5th, three poles fell across north track at Park's Corner, two others nearly, caused by snow and ice. Happened at nightfall; delayed one train 15 or 20 minutes. Same time, a pole came down at Natick Pond, struck by freight train. In March, 1884, trees loaded with snow and ice broke wires on Milford Branch.

Sect. 10.—In 1870, three poles fell on track near 26 M. P.; seven or eight others down at Park's Corner. In June, 1883, two on south side, near 25 M. P., leaned over, had to be righted.

Sect. 13.—In 1870, ice and snow upon wires pulled two poles

upon track. In removing, six or eight more fell over about 30 minutes before train was due.

Division No. 2, Sect. 4. — In 1873, one mile west of Charlton, ice collected on wires, poles broken, and wires and poles fell across track for half mile.

Sect. 6. — At West Brookfield, one or two poles blown down, April, 1874; while lying across the track, a train ran into them, and drew poles and wires upon the tracks for one mile.

P. & N. A. Branch, Sect. 2. — E. W. Blood says, last week of April, 1883, three poles leaned so that wire scraped cars; one pole was knocked over by cars about eighty rods south of 10 M. P., Cheshire.

Division No. 3. — Have braced up great many poles during five years.

Sect. 6. — At Mica mill, smokestack of engine struck wires.

Sect. 7. — Twice in Feb., 1884, wires fell from poles and obstructed tracks.

Sect. 11. — Have righted up leaning poles many times, and mended broken wires.

North Adams Branch, Sect. 6. — Telegraph poles have been blown upon track during storm.

Division No. 4. — In 1873, five poles blown down upon track west of station.

Sect. 7. — Two poles broken by wind, sixteen blown down, sixteen partly down, twelve wires broken.

Sect. 9. — In 1876, pole blown upon track; wires broken.

Sect. 11. — In 1882 and 1883, two poles broken. In 1883, wires blown across track.

Division No. 1, Sect. 13. — About Nov. 1, 1883, four poles fell on track, south side, between Yellow Bridge and 42 M. P.

185. — Wire across tracks swept two men from top of freight train; one killed, the other lost an arm.

EXTRACT FROM A DECISION OF THE BOARD, MAY 12, 1884.

“The company has not been shown to have so acted toward the Western Union company as to raise the question whether the petitioner is subjected to undue disadvantage in dealing with the respondents. The proof of actual special delivery refers to wire which was to be used solely for railroad purposes by the respondent alone. But, assuming that all the material used for constructing the telegraph on this line was carried under the contract and delivered between

stations, this gives to no other party any right to similar delivery. No other party stands in the same position, or can ask for delivery under like circumstances. Of the wires to be placed in position, several were for the sole use of the railroad company, and all were for its use, even for its exclusive use, in case of need. The primary object of the telegraph company was the commercial use of wires, but the primary object of the railroad company was to secure their use for railroad purposes; and without them the roads could not be operated. The railroad managers secured this on better terms by agreeing to this exceptional mode of delivery. It was part of the consideration for obtaining and maintaining an essential part of their road. Because they paid a price — a transportation privilege — for a service which they needed, it does not follow that they must pay the same price to another party for a service which they do not need, and which that party cannot render. A railroad company, by allowing a construction train to stop between stations, does not entitle the contractors of a parallel or neighboring road to demand like stops as a right. And if, instead of building a second track itself, the railroad company should agree with a contractor to do so, and should, for the sake of expedition or cheapness in construction, permit him to make such stop for the delivery of material, this would not confer such a right on other contractors for other roads or for other like work.

The case before us is parallel with that supposed, or rather it is identical, for telegraphic devices are so essential to the operation of a railroad that placing them on the track is railroad construction, and repairing them is repairing the railroad track."

[J.]

THE JEWETT WRECKING AND CONSTRUCTING CAR.

The object of this car, recently finished and tested by Mr. Harrison Loring of Boston, is to lift cars which have been derailed, and also to handle heavy weights, and articles in railroad construction. The car, which is strongly built and specially adapted for heavy work, is provided with a tipping counterbalanced mast, 25 feet in height, and with connected boom 32 feet in length, which are mounted on a turn-table. Under the turn-table is a platform which is adjustable so as to rest upon the track, thus giving increased stability, and taking a part of the weight from the car when required. The car is fitted with patent grips to secure it firmly to the track, and on each side are eight jack-screws, hinged to the car, which rest on plank placed upon the end of ties when in use. These jack-screws give the derrick a firm foundation, and with the centre-step of the mast resting on the track, prevent any tipping of the car when a weight of twenty tons or more is lifted. The boom can be extended twenty-five feet from the centre of the track in any direction, and a weight of ten tons can be lifted and swung around the entire circle.

The car is twenty feet long, of the height of an ordinary platform car, and weighs forty-five tons. With it is a tender or tool car, which also forms a rest for the head of the mast when lowered.

[K.]

CIRCULARS.

COMMONWEALTH OF MASSACHUSETTS.
IN BOARD OF RAILROAD COMMISSIONERS.
DECEMBER 5, 1884.

The Board of Railroad Commissioners, acting under chapter 222 of the acts of 1884, "requiring railroad companies to use safety couplers on freight cars," prescribes the forms of couplers herein named to be placed upon freight cars on and after March 1, 1885, according to the provisions of said chapter, viz.: The Janney Car Coupler for freight cars; the Hilliard Automatic Freight Coupler; the Cowell Freight Coupler; the United States Automatic Coupler; the Ames Automatic Car Coupler, being the coupler patented by Gilman H. Ames.

WM. A. CRAFTS, *Clerk.*

COMMONWEALTH OF MASSACHUSETTS.
BOARD OF RAILROAD COMMISSIONERS.
BOSTON, December 23, 1884.

THE TRANSPORTATION OF EXPLOSIVES.

The attention of the Board has been called to the need of greater care in regard to the laws relative to the transportation of high explosives, and to the rules made by the Board in pursuance of those laws.

We are informed that the dynamite which recently caused a terrible explosion in a New Hampshire town was transported in violation of the statute, and of all the laws of prudence, in the train of a Massachusetts railroad, and in the care of an express company. Neither the employees of the railroad nor of the express company were guilty of any wrong or of any carelessness. They were all misled by the recklessness of the person who smuggled the dangerous article into the car, and imperilled the lives of all persons in the train.

The terrible results that followed the careless handling of this explosive, while they preclude any idea of enforcing the law against this offender, illustrate the danger to every person on the train by which the article was conveyed, without any warning given or precaution taken.

It seems desirable to call the attention of all managers of railroad companies to the law and rules regulating the transportation of explosives. The penalties provided are severe, being fines not exceeding \$5,000, and confinement in the State prison not exceeding five years. But they are not too severe when it is considered what enormous danger is created for innocent passengers by reckless persons who wish to avoid a slight expense or secure a slight convenience. And it is the duty of all persons connected with railroad companies not only to exercise diligence as to transportation of explosives, but also, whenever the law is violated, to bring the offender to justice for the protection of the public.

THOMAS RUSSELL, *Chairman.*

COMMONWEALTH OF MASSACHUSETTS.

BOARD OF RAILROAD COMMISSIONERS, No. 20 BEACON STREET.

RULES REGULATING THE TRANSPORTATION OF HIGH EXPLOSIVES.

1. Liquid nitro-glycerine, or leaky dynamite powders, or gun-cotton other than pulverized and compressed gun-cotton, shall in no form and under no circumstances be transported in any public conveyance, or by any common carrier.

2. Nitro-glycerine in any of its forms may be transported by railroad companies in a congealed state, and in cars specially provided for the exclusive carriage thereof: *provided*, that the packages in which such nitro-glycerine is contained are during transportation kept constantly packed in ice under the direction of the railroad corporation transporting the same, and are in charge of a competent agent, furnished by the forwarder, who shall during the time such nitro-glycerine is in the custody of the transporting company be under its control, and shall at all times travel in the car in which the explosive is carried.

3. Nitro-glycerine in any of its forms may be transported by common carriers other than railroads in a congealed state: *provided*, that the packages in which said nitro-glycerine is contained are placed in boxes or refrigerators, which shall be constantly packed with ice under the direction of the common carrier undertaking to transport

the same, and shall be in charge of a competent person furnished by the forwarder, who shall during the time such nitro-glycerine is in the custody of the common carrier, be under his control.

4. Nitro-glycerine shall not in any form, or under any circumstances, be transported by any common carrier in any public conveyance or train used in whole or in part for the carriage of passengers.

5. Pulverized gun-cotton in a compressed form and in a moist state, and all dry explosive powders, commonly known as high explosives, as dualin, giant-powder, rend-rock, dynamite, etc., made in part of nitro-glycerine, may be transported by railroad companies upon freight trains, and by all other common carriers in public conveyances, in wooden cases holding not exceeding one hundred (100) pounds, nor less than five (5) pounds of explosives: *provided*, that such explosives are packed in dry sawdust, as follows: When in bulk such explosives shall be surrounded on all sides with at least three (3) inches of dry sawdust between the powder and the inside surface of the case. When in cartridges, each cartridge shall be surrounded on all sides with dry sawdust, and all interstices between such cartridges, and a space of at least one inch between the outer side of such cartridges and the inside surface of the case, shall be filled with dry sawdust. Each of such cases shall be plainly marked, on at least three (3) of its sides, with the name of its contents, and "Explosive — Dangerous," so as to be readily seen by those who are to handle it.

6. All explosives of the fulminate class may be transported in vehicles, or on trains not used for the carriage of passengers, in wooden, water-tight kegs, in a wet state: *provided*, that such water-tight kegs are placed in wooden packages filled in with sawdust, which shall be marked in the method prescribed in the case of dry explosives in the foregoing rule, number 5.

7. Large percussion caps or exploders, or other substances, the explosion of which by fire will explode the powders referred to in the foregoing rules, shall in no case be transported in the same railroad car with such powders, or within the distance of fifty feet of the same in any public conveyance.

The foregoing are the rules made and published by the Board of Railroad Commissioners in December, 1877, under the provisions of chap. 216, sect. 4, Acts of 1877 (now chap. 102, sect. 62, Public Statutes).

WM. A. CRAFTS, *Clerk*.

[L.]

EXPENSES OF OFFICE

FOR THE YEAR ENDING DEC. 31, 1884.

Rent of office,	\$2,375 00
Furniture, carpet, gas fixture, etc.,	834 87
Messenger and care of office,	480 00
Services and expenses of experts and other agents,	502 02
Printing blanks and circulars and binding returns, etc.,	263 83
Paper, envelopes, and other stationery,	123 05
Telephone, telegraph and gas,	113 27
Books, railroad periodicals and newspapers,	99 65
Postage,	99 00
Advertising and expenses of hearings,	68 40
Witness fees,	44 83
Carriages and expense of removal of office,	99 75
Watering street and ice,	36 00
Incidentals for office,	37 92
	<hr/>
	\$5,176 59

BOARD OF RAILROAD COMMISSIONERS.

THOMAS RUSSELL, Boston, <i>Chairman</i> ,	Term expires July, 1885
EVERETT A. STEVENS, Boston,	" " July, 1886
EDWARD W. KINSLEY,	" " July, 1887

Clerk — WILLIAM A. CRAFTS, Boston.*Accountant* — FRED E. JONES, Boston.

TABULATED STATEMENT

OF

RAILWAY AND RAILROAD
RETURNS.

[195]

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Cars,	47	216
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Horses,	49	216
Harnesses,	50	216

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Main Line,	51	216
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	Column.	Page.
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Cost of Equipment,	64	220
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Repairs of Equipment,	66	220
Renewals of Horses,	67	220

GROSS INCOME.

Per Mile operated,	68	222
Per Round Trip,	69	222
Per Mile run,	70	222
Per Passenger carried,	71	222

EXPENSES.

Per Mile operated,	72	222
Per Round Trip,	73	222
Per Mile run,	74	224
Per Passenger carried,	75	224

NET INCOME.

Per Mile operated,	76	224
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Nantasket Beach,	25	248
Nantucket,	35	256
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Newburyport City,	47	261
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New London Northern,	27	248
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New York & New England,	14	240
New York, New Haven & Hartford,	28	252
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Worcester, Nashua & Rochester,	31	252
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TABULATED COMPARATIVE RESULTS.

STOCK, DEBT AND COST PER MILE OF ROAD OWNED.

Stock paid in,	71	268
Net Debt,	72	268
Total Stock and Net Debt,	73	268
Construction,	74	263
Equipment,	75	268
Total Permanent Investments,	76	268

EARNINGS AND EXPENSES PER TOTAL REVENUE-TRAIN MILE.

Total Transportation Earnings,	77	269
Operating Expenses,	78	269
Net Earnings,	79	269

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Total Transportation Earnings,	80	269
Operating Expenses,	81	269
Net Earnings,	82	269

EXPENSES PER TOTAL TRAIN MILE.

Repairs of Road,	83	270
Repairs of Bridges,	84	270
New Rails,	85	270
Repairs of Locomotives,	86	270
Fuel,	87	270
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* Makes special report to the Legislature.

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	Column.	Page.
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EARNINGS, EXPENSES, NET EARNINGS, ETC.

Passenger Earnings,	98	272
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Total Transportation Earnings,	100	272
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Net Earnings,	102	272
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ABSTRACT OF STREET RAILWAY RETURNS.

STREET RAILWAYS.		CAPITAL STOCK, DEBT, ETC.						
		1.—Capital Stock paid in.	2.—Number of Stock-holders.	3.—Funded Debt.	4.—Unfunded Debt.	5.—Gross Debt.	6.—Cash and Cash Assets.	7.—Net Debt.
1	Acushnet,	\$10,000 00	42	-	-	-	\$8,223 12	-
2	Albany Street Freight,	50,000 00	4	-	-	-	1,167 36	-
3	Arlington,	13,600 00	23	-	-	-	-	-
4	Brookton,	150,000 00	59	-	\$7,502 72	\$7,502 72	22,657 13	-
5	Black Rocks & Salisbury B'h,	9,000 00	8	-	81 98	81 98	2,500 00	-
6	Boston & Chelsea,	121,000 00	87	-	-	-	-	-
7	Cambridge,	1,600,000 00	797	\$600,000 00	49,181 78	649,181 78	45,052 61	\$604,129 17
8	Charles River,	250,000 00	155	14,000 00	135,505 18	149,505 18	12,845 44	136,659 74
9	Globe,	200,000 00	70	-	17,127 10	17,127 10	12,973 44	4,153 66
10	Haverhill & Groveland,	24,000 00	22	-	6,500 00	6,500 00	1,438 74	5,061 26
11	Highland,	750,000 00	347	425,000 00	130,762 24	555,762 24	73,807 31	481,954 93
12	Holyoke,	25,000 00	47	-	-	-	9,328 61	-
13	Lowell,	93,100 00	107	-	7,350 00	7,350 00	15,785 65	-
14	Lynn & Boston,	300,000 00	118	275,000 00	48,133 19	323,133 19	24,008 92	299,134 27
15	Malden & Melrose,	165,500 00	51	-	-	-	-	-
16	Merrimac Valley,	50,000 00	44	-	6,000 00	6,000 00	1,276 36	4,723 64
17	Metropolitan,	1,500,000 00	1,029	1,053,000 00	682,794 21	1,735,794 21	87,770 01	1,648,024 20

18	Middlesex,	650,000 00	420	350,000 00	314,667 97	664,667 97	306,433 29	358,234 68
19	Naumkeag,	70,000 00	48	84,100 00	59,343 62	143,443 62	41,286 79	102,156 83
20	New Bedford & Fairhaven, .	135,000 00	129	-	9,264 04	9,264 04	6,671 59	2,592 45
21	Newburyport & Amesbury, .	60,000 00	28	24,000 00	1,796 33	25,796 33	-	25,796 33
22	Northampton,	50,000 00	12	-	5,384 00	5,384 00	29 26	5,354 74
23	North Woburn,	25,000 00	13	-	4,900 00	4,900 00	247 03	4,652 97
24	Salem,	150,000 00	63	34,100 00	37,700 00	71,800 00	34,327 43	37,472 57
25	Salem & Danvers,	60,000 00	70	-	2,548 28	2,548 28	5,004 97	-
26	Somerville,	153,000 00	115	-	-	-	-	-
27	South Boston,	750,000 00	484	-	174,191 17	174,191 17	53,642 66	120,548 51
28	Springfield,	125,000 00	57	-	25,380 17	25,380 17	10,142 35	15,237 82
29	Stoneham,	33,000 00	17	-	-	-	3,326 11	-
30	Taunton,	40,000 00	112	-	6,000 00	6,000 00	5,578 57	421 43
31	Waltham & Newton,	30,000 00	88	-	16,600 00	16,600 00	1,293 36	15,306 64
32	Winnisimmet,	50,000 00	46	-	383 00	383 00	506 35	-
33	Worcester,	40,000 00	8	40,000 00	30,134 43	70,134 43	7,970 75	62,163 68
Total,		\$7,732,200 00	4,720	\$2,899,200 00	\$1,779,231 41	\$4,678,431 41	\$795,295 21	\$3,883,136 20

ABSTRACT OF STREET RAILWAY RETURNS — Continued.

		COST OF ROAD, EQUIPMENT, ETC.					
		8. — Road.	9. — Equipment.	10. — Land and Buildings.	11. — Other Property.	12. — Total Permanent Investments.	13. — Total Property and Assets.
1	Acushnet,	\$1,776 88	-	-	-	\$1,776 88	\$10,000 00
2	Albany Street Freight,	49,066 29	-	-	-	49,066 29	50,233 65
3	Arlington,	13,600 00	-	-	-	13,600 00	13,600 00
4	Brockton,	120,756 96	\$26,825 75	\$7,700 00	-	155,282 71	177,939 84
5	Black Rocks & Salisbury Beach,	4,901 98	2,200 00	380 00	-	7,481 98	9,981 98
6	Boston & Chelsea,	121,000 00	-	-	-	121,000 00	121,000 00
7	Cambridge,	1,102,043 79	508,945 98	624,901 28	-	2,235,891 05	2,280,943 66
8	Charles River,	180,302 16	111,889 60	62,257 67	\$1,351 60	355,801 03	368,646 47
9	Globe,	134,261 83	47,897 03	36,325 26	-	218,484 12	231,457 56
10	Haverhill & Groveland,	20,121 29	9,148 22	5,300 00	-	34,569 51	36,008 25
11	Highland,	403,131 55	409,088 13	397,519 24	57,000 00	1,206,738 92	1,340,546 23
12	Holyoke,	9,139 79	6,531 60	-	-	15,671 39	25,000 00
13	Lowell,	73,441 45	24,545 71	17,372 82	-	115,359 98	131,145 63
14	Lynn & Boston,	380,904 14	150,951 96	113,715 17	-	645,571 27	669,580 19
15	Malden & Melrose,	74,719 52	-	-	-	74,719 52	74,719 52
16	Merrimac Valley,	20,000 00	9,000 00	35,000 00	-	64,000 00	65,276 36
17	Metropolitan,	1,549,441 15	941,832 87	1,127,147 72	175,000 00	3,793,421 74	3,881,191 75

18	Middlesex,	571,792 54	227,546 28	250,040 77	-	1,049,379 59	1,355,812 88
19	Naumkeag,	22,061 94	70,084 87	15,794 73	139,475 38	247,416 42	288,703 21
20	New Bedford & Fairhaven,	92,844 68	40,712 84	32,364 90	-	165,922 42	172,594 01
21	Newburyport & Amesbury,	80,761 43	-	10,850 00	-	91,611 43	91,611 43
22	Northampton,	46,150 00	5,830 60	4,100 00	-	56,080 60	56,109 86
23	North Woburn,	25,550 00	1,950 00	1,500 00	-	29,000 00	29,247 03
24	Salem,	203,569 52	-	5,283 84	-	208,853 36	243,180 79
25	Salem & Danvers,	34,079 03	19,009 91	9,694 30	-	62,783 24	67,788 21
26	Somerville,	153,000 00	-	-	-	153,000 00	153,000 00
27	South Boston,	302,738 14	288,622 50	308,627 94	10,000 00	909,988 58	963,631 24
28	Springfield,	91,584 89	36,914 88	51,025 87	-	179,525 64	189,667 99
29	Stoneham,	33,600 00	8,378 70	3,429 83	1,629 00	47,037 53	50,363 64
30	Taunton,	24,000 00	14,875 00	8,000 00	-	46,875 00	52,453 57
31	Waltham & Newton,	37,493 41	7,744 37	3,448 88	-	48,686 66	49,980 02
32	Winniminnet,	50,000 00	-	-	-	50,000 00	50,506 35
33	Worcester,	80,410 97	32,608 48	27,079 00	-	140,098 45	148,069 20
Total,		\$6,108,245 33	\$3,003,134 78	\$3,158,859 22	\$384,455 98	\$12,654,695 31	\$13,449,990 52

ABSTRACT OF STREET RAILWAY RETURNS — Continued.

		PROPERTY ACCOUNTS: ADDITIONS AND REDUCTIONS DURING THE YEAR.					
		14. — Construction.	15. — Equipment.	16. — Other Prop-erty.	17. — Total Addi-tions.	18. — Reductions.	19. — Net Additions.
	STREET RAILWAYS.						
1	Acushnet,	\$1,776 88	-	-	\$1,776 88	-	\$1,776 88*
2	Albany Street Freight,	-	-	-	-	-	-
3	Arlington,	-	-	-	-	-	-
4	Brockton,	39,580 01	9,088 38	6,624 66	55,293 05	\$6,804 11	48,488 94
5	Black Rocks & Salisbury Beach,	4,901 98	2,200 00	380 00	7,481 98	-	7,481 98†
6	Boston & Chelsea,	-	-	-	-	-	-
7	Cambridge,	2,043 79	9,674 27	24,501 28	36,219 34	3,080 00	33,139 34
8	Charles River,	26,956 60	32,615 49	19,113 38	78,685 47	7,051 73	71,633 74
9	Globe,	34,087 49	5,553 55	1,188 36	40,829 40	-	40,829 40
10	Haverhill & Groveland,	4,921 29	1,083 80	1,100 00	7,105 09	-	7,105 09
11	Highland,	38,266 69	29,015 25	3,732 49	71,014 43	-	71,014 43
12	Holyoke,	9,139 79	6,531 60	-	15,671 39	-	15,671 39*
13	Lowell,	4,555 20	1,000 00	-	5,555 20	-	5,555 20
14	Lynn & Boston,	51,280 49	20,631 76	32,812 85	104,725 10	-	104,725 10
15	Malden & Melrose,	-	-	-	-	-	-
16	Merrimac Valley,	-	-	-	-	5,600 00	5,600 00d
17	Metropolitan,	6,767 76	18,740 00	45,335 16	70,842 92	2,095 75	68,747 17

18	Middlesex,	39,100 55	7,225 50	-	46,326 05	-	46,326 05
19	Naumkeag,	7,452 58	14,905 42	10,164 55	32,522 55	-	32,522 55
20	New Bedford & Fairhaven, .	7,845 53	4,614 94	-	12,460 47	-	12,460 47
21	Newburyport & Amesbury, .	-	-	-	-	-	-
22	Northampton,	-	778 10	-	778 10	-	778 10
23	North Woburn,	-	-	-	-	-	-
24	Salem,	-	-	-	-	-	-
25	Salem & Danvers,	34,079 03	19,009 91	9,694 30	62,783 24	-	62,783 24†
26	Somerville,	-	-	-	-	-	-
27	South Boston,	8,940 00	46,000 32	3,035 45	57,975 77	5,878 92	52,096 85
28	Springfield,	6,212 34	4,475 42	2,741 12	13,428 88	-	13,428 88
29	Stoneham,	-	132 90	-	132 90	50 00	82 90
30	Taunton,	-	410 00	-	410 00	-	410 00
31	Waltham & Newton,	-	-	-	-	-	-
32	Winnisimmet,	-	-	-	-	-	-
33	Worcester,	-	2,725 00	-	2,725 00	-	2,725 00
Total,		\$327,908 00	\$236,411 61	\$160,423 60	\$724,743 21	\$30,560 51	\$694,182 70

* In process of construction.

† Built during the year.

‡ Reduction.

ABSTRACT OF STREET RAILWAY RETURNS — Continued.

		REVENUE FOR THE YEAR.				
		STREET RAILWAYS.	20. — Passengers.	21. — Rents.	22. — Mail and Express.	23. — Sales of Manure.
			24. — Other Sources.	25. — Total Income.		
1	Acushnet,	*	—	—	—	—
2	Albany Street Freight,	†	—	—	\$2,356 00	\$2,356 00
3	Arlington,	†	\$516 00	—	—	816 00
4	Brockton,	\$44,479 99	—	—	1,076 84	45,856 83
5	Black Rocks & Salisbury Beach,	5,205 57	—	—	—	5,205 57
6	Boston & Chelsea, . . . . .	||	7,260 00	—	—	7,260 00
7	Cambridge,	602,776 93	8,115 32	—	—	620,028 43
8	Charles River,	120,255 97	—	—	1,360 58	123,068 26
9	Globe,	87,923 39	—	—	720 12	89,491 37
10	Haverhill & Groveland,	12,657 23	—	—	147 00	12,841 73
11	Highland,	512,164 61	1,815 09	—	2,086 75	518,761 35
12	Holyoke,	¶	—	—	—	—
13	Lowell,	68,198 61	—	—	924 96	69,723 57
14	Lynn & Boston,	340,867 78	—	—	—	343,513 14
15	Malden & Melrose,	**	—	—	—	—
16	Merrimac Valley,	45,106 92	—	—	200 00	45,706 92
17	Metropolitan,	1,694,584 03	34,740 75	—	9,023 47	1,750,953 43

18	Middlesex,	352,974 86	9,327 16	-	3,166 92	719 50	366,188 44
19	Naumkeag,	88,092 74	-	-	1,019 06	205 60	89,317 40
20	New Bedford & Fairhaven,	77,572 84	-	\$683 50	832 90	-	79,089 24
21	Newburyport & Amesbury,	††	4,950 00	-	-	333 33	5,283 33
	Lessee's Account,	24,722 75	-	-	300 00	-	25,022 75
22	Northampton,	10,548 70	-	184 10	161 00	-	10,893 80
23	North Woburn,	3,332 80	-	125 00	40 00	-	3,497 80
24	Salem,	††	100 00	-	-	-	100 00
25	Salem & Danvers,	10,359 15	-	-	71 00	-	10,430 15
26	Somerville,	†	9,180 00	-	-	-	9,180 00
27	South Boston,	468,174 61	2,556 48	-	2,142 93	1,336 03	474,210 05
28	Springfield,	68,725 92	-	-	697 86	4,497 20	73,920 98
29	Stoneham,	19,576 33	-	312 50	268 50	-	20,157 33
30	Taunton,	24,176 29	-	-	-	-	24,176 29
31	Waltham & Newton,	11,772 11	-	50 00	150 00	-	11,972 11
32	Winnisimmet, . . . . .	||	3,000 00	-	-	-	3,000 00
33	Worcester,	67,465 12	-	-	500 49	85 00	68,050 61
	Total,	\$4,761,715 25	\$81,860 80	\$1,355 10	\$40,149 35	\$25,022 38	\$4,910,102 88

* Construction not yet commenced.

‡ Operated for 3 months and 3 days.

** Leased to and operated by the Middlesex.

† Used only for freight.

|| Leased to and operated by the Lynn & Boston.

†† Leased to and operated by E. P. Shaw.

‡ Leased and operated by the Cambridge.

†† Road not yet in operation.

†† Leased to and operated by the Naumkeag.

ABSTRACT OF STREET RAILWAY RETURNS — Continued.

		EXPENSES FOR THE YEAR.							
		STREET RAILWAYS.	26.—Repairs of Road-bed and Track.	27.—Repairs of Equipment.	28.—Repairs of Buildings.	29.—Renewal of Horses.	30.—Salaries, etc., General Office.	31.—Wages, etc., Employés.	32.—Providence.
1	Aenshnet,	-	-	-	-	-	-	-	-
2	Albany Street Freight,	\$162 22	-	-	-	-	\$150 00	-	-
3	Arlington,	-	-	-	-	-	-	-	-
4	Brockton,	951 29	\$1,316 86	-	-	-	1,987 50	\$12,642 10	\$6,637 74
5	Black Rocks & Salisbury Beach,	150 00	-	-	-	-	2,450 00	1,439 91	-
6	Boston & Chelsea,	-	-	-	-	-	-	-	-
7	Cambridge,	10,415 76	39,039 89	\$224 18	\$16,380 96	15,690 00	238,926 94	124,665 05	
8	Charles River,	299 35	6,178 49	306 17	7,051 73	2,200 00	57,503 56	26,273 64	
9	Globe,	2,141 40	7,605 08	997 60	1,468 01	3,832 00	30,552 10	14,768 24	
10	Haverhill & Groveland,	1,151 12	668 52	16 17	460 00	725 00	3,258 36	1,535 94	
11	Highland,	10,605 11	34,909 79	3,031 99	18,194 00	17,900 00	203,923 80	83,975 79	
12	Holyoke,	-	-	-	-	-	-	-	-
13	Lowell,	2,903 86	6,961 48	740 67	3,348 60	2,999 88	20,852 80	8,472 89	
14	Lynn & Boston,	16,084 66	33,723 34	2,328 40	20,637 50	9,869 60	110,031 19	54,797 15	
15	Malden & Melrose,	-	-	-	-	-	-	-	-
16	Merrimac Valley,	6,416 75	3,732 90	97 00	1,182 50	1,700 00	13,357 48	6,809 87	
17	Metropolitan,	38,441 68	133,691 43	15,908 32	53,223 50	26,416 65	717,323 22	277,668 65	

18	Middlesex,	2,498 80	27,284 38	1,199 20	11,736 00	13,708 67	111,810 96	63,643 27
19	Namkeag,	8,823 57	7,111 06	766 90	1,621 50	4,219 02	19,711 50	11,186 77
20	New Bedford & Fairhaven,	1,519 06	7,067 73	1,219 93	3,285 00	3,320 08	26,618 86	14,701 05
21	Newburyport & Amesbury,	4,476 51	-	-	-	200 00	-	-
	Lessee's Account,	700 18	1,761 44	-	261 00	676 00	6,558 70	5,585 50
22	Northampton,	998 23	1,005 53	-	431 00	983 30	2,803 25	2,143 50
23	North Woburn,	443 81	621 95	-	230 00	-	1,255 60	642 03
24	Salem,	-	-	-	-	-	-	-
25	Salem & Danvers,	-	286 78	-	-	348 29	2,373 47	1,162 00
26	Somerville,	-	-	-	-	-	-	-
27	South Boston,	10,167 19	32,491 74	4,132 23	20,504 50	9,199 92	182,365 84	71,409 00
28	Springfield,	5,413 04	4,520 21	163 84	1,699 00	4,080 00	22,399 50	11,328 37
29	Stoneham,	2,419 88	2,075 15	330 80	350 00	1,571 17	5,165 54	2,968 74
30	Taunton,	1,682 74	1,914 69	100 00	20 00	1,200 00	6,587 26	5,158 76
31	Waltham & Newton,	1,440 11	190 65	-	-	940 00	3,016 25	1,878 47
32	Winnisimmet,	-	-	-	-	-	-	-
33	Worcester,	4,544 07	6,067 68	258 77	2,621 95	2,400 00	19,871 02	10,864 64
	Total,	\$134,850 39	\$360,226 77	\$51,822 17	\$164,706 75	\$128,767 08	\$1,820,349 21	\$808,277 06

ABSTRACT OF STREET RAILWAY RETURNS — Continued.

		EXPENSES FOR THE YEAR — Concluded.							
		STREET RAILWAYS.	33.—Taxes.	34.—Rents.	35.—Insurance.	36.—Injuries to Persons and Property.	37.—Other Expenses.	38.—Total Expenses.	39.—Percentage Expenses to Earnings.
1	Acushnet, . . . . .	.	—	—	—	—	—	—	—
2	Albany Street Freight, . . . . .	.	\$172 82	—	—	—	\$1,479 95	\$1,964 99	—
3	Arlington, . . . . .	.	—	—	—	—	—	—	—
4	Brockton, . . . . .	.	1,490 91	—	\$538 53	\$385 03	2,261 68	28,211 69	62
5	Black Rocks & Salisbury Beach, . . . . .	.	—	—	25 87	—	239 79	4,305 57	—
6	Boston & Chelsea, . . . . .	.	—	—	—	—	—	—	—
7	Cambridge, . . . . .	.	21,200 84	\$12,171 65	2,137 83	2,774 20	37,616 31	521,243 61	84
8	Charles River, . . . . .	.	2,744 32	6,186 73	867 14	833 07	7,265 52	117,709 72	96
9	Globe, . . . . .	.	4,057 90	—	768 37	90 50	5,179 32	71,460 52	80
10	Haverhill & Groveland, . . . . .	.	225 92	—	104 37	30 00	608 85	8,784 25	68
11	Highland, . . . . .	.	12,029 92	17,209 25	4,032 13	6,223 66	12,134 21	424,169 65	82
12	Holyoke, . . . . .	.	—	—	—	—	—	—	—
13	Lowell, . . . . .	.	920 88	—	825 15	195 00	4,929 85	53,151 06	76
14	Lynn & Boston, . . . . .	.	6,563 75	20,778 18	2,476 83	3,852 30	16,592 01	297,734 91	87
15	Malden & Melrose, . . . . .	.	—	—	—	—	—	—	—
16	Merrimac Valley, . . . . .	.	950 96	—	830 00	—	1,015 80	36,093 26	79
17	Metropolitan, . . . . .	.	38,812 75	4,246 33	7,442 54	34,560 51	69,932 59	1,417,668 17	81

18	Middlesex,	9,827 48	6,593 28	2,232 99	8,314 30	18,576 71	277,426 04	76
19	Naumkeag,	1,426 47	100 00	711 80	5,673 56	8,251 15	69,603 30	78
20	New Bedford & Fairhaven,	3,143 80	-	508 50	128 69	2,879 66	64,392 36	81
21	Newburyport & Amesbury,	-	-	25 00	-	1,099 97	5,801 48	-
	Lessee's Account,	-	-	103 75	200 00	9,164 04	25,010 61	-
22	Northampton,	80 07	-	-	-	1,036 63	9,481 51	87
23	North Woburn,	40 01	-	24 50	50 00	328 24	3,636 14	104
24	Salem,	-	-	-	-	100 00	100 00	-
25	Salem & Danvers,	10 12	167 45	257 70	-	584 41	5,190 22	50
26	Somerville,	-	-	-	-	-	-	-
27	South Boston,	15,732 43	10,853 39	2,305 50	3,199 35	28,005 63	390,366 72	82
28	Springfield,	2,627 41	-	205 38	2,146 15	1,673 50	56,346 40	76
29	Stoneham,	268 93	-	108 05	-	678 36	15,936 62	79
30	Taunton,	490 27	-	246 55	-	2,267 79	19,668 06	81
31	Waltham & Newton,	33 18	-	63 75	-	1,729 84	9,292 25	78
32	Winnisimmet,	-	-	-	-	-	-	-
33	Worcester,	527 23	-	325 00	25 00	3,361 30	50,866 66	75
	Total,	\$128,378 37	\$78,306 26	\$27,257 28	\$68,681 32	\$238,993 11	\$3,985,615 77	81

ABSTRACT OF STREET RAILWAY RETURNS — Continued.

STREET RAILWAYS.		NET INCOME, INTEREST, DIVIDENDS, ETC.						
		40. — Net Income.	41. — Interest Accrued.	42. — Dividends Declared.	43. — Per Cent.	44. — Balance for the Year.	45. — Surplus last Year.	46. — Surplus Sept. 30, 1884.
1	Acushnet,	—	—	—	—	—	—	—
2	Albany Street Freight,	\$391 01	—	—	—	\$391 01	\$157 36	\$233 65
3	Arlington,	816 00	—	\$816 00	6	—	—	—
4	Brockton,	17,645 14	\$1,700 36	7,500 00	10*	8,444 78	11,992 34†	20,437 12
5	Black Rocks & Salisbury Beach,	900 00	—	—	—	900 00	—	900 00
6	Boston & Chelsea,	7,260 00	—	7,260 00	6	—	—	—
7	Cambridge,	98,784 82	28,894 54	48,000 00	3	21,890 28	9,871 60	31,761 88
8	Charles River,	5,358 54	5,358 54	—	—	—	30,858 71	30,858 71
9	Globe,	18,030 85	—	8,000 00	4	10,030 85	4,299 61	14,330 46
10	Haverhill & Groveland,	4,057 48	—	1,680 00	7	2,377 48	3,130 77	5,508 25
11	Highland,	94,591 70	26,978 91	60,000 00	8	7,612 79	27,171 20	34,783 99
12	Holyoke,	—	—	—	—	—	—	—
13	Lowell,	16,572 51	4 43	5,574 00	6	10,994 08	19,701 55†	30,695 63
14	Lynn & Boston,	45,778 23	12,613 82	24,000 00	8	9,164 41	37,282 59	46,447 00
15	Malden & Melrose,	—	—	—	—	—	—	—
16	Merrimac Valley,	9,613 66	608 34	3,000 00	6	6,005 32	3,271 04||	9,276 36
17	Metropolitan,	333,285 26	91,517 11	120,000 00	8	121,768 15	523,629 39	645,397 54

18	Middlesex,	88,762 40	39,692 96	45,500 00	7	3,569 44	37,575 47	41,144 91
19	Naumkeag,	19,744 10	4,684 77	15,400 00	22	340 67 <i>d</i>	75,600 26	75,259 59
20	New Bedford & Fairhaven,	14,696 88	126 58	10,800 00	8	3,770 30	24,559 67	28,329 97
21	Newburyport & Amesbury,	518 15 <i>d</i>	1,680 00	-	-	2,198 15 <i>d</i>	8,013 15	5,815 10
	Lessee's Account,	12 14	-	-	-	12 14	-	12 14
22	Northampton,	1,412 29	-	-	-	1,412 29	686 43 <i>d</i>	725 86
23	North Woburn,	138 34 <i>d</i>	268 00	-	-	406 34 <i>d</i>	246 63 <i>d</i>	652 97 <i>d</i>
24	Salem,	-	-	-	-	-	21,380 79	21,380 79
25	Salem & Danvers,	5,239 93	-	-	-	5,239 93	-	5,239 93
26	Somerville,	9,180 00	-	9,180 00	6	-	-	-
27	South Boston,	83,843 33	7,482 57	60,000 00	8	16,360 76	23,079 31\$	39,440 07
28	Springfield,	17,574 58	785 77	10,000 00	8	6,788 81	32,499 01	39,287 82
29	Stoneham,	4,220 71	-	1,980 00	6	2,240 71	15,122 93	17,363 64
30	Taunton,	4,508 23	272 25	2,400 00	6	1,835 98	4,617 59	6,453 57
31	Waltham & Newton,	2,679 86	-	-	-	2,679 86	700 16	3,380 02
32	Winnisimmet,	3,000 00	-	3,000 00	6	-	123 35	123 35
33	Worcester,	17,183 95	4,349 49	-	-	12,834 46	25,100 31	37,934 77
	Total,	\$924,487 11	\$227,018 44	\$144,090 00	5.74	\$253,378 67	\$938,490 48	\$1,191,869 15

† \$6,804.11 deducted for "Depreciation."

‡ \$1,950.00 added for Centralville Extension.

d Deficit.

* On \$75,000.00 Capital Stock.

§ \$12,344.72 deducted for Outstanding Tickets and Depreciation.

|| \$6,000.00 deducted for Depreciation.

ABSTRACT OF STREET RAILWAY RETURNS — Continued.

		STREET RAILWAYS.	EQUIPMENT.				LENGTH OF ROAD.		
			47. — Cars.	48. — Other Vehicles.	49. — Horses.	50. — Harnesses.	51. — Main Line.	52. Sidings.	53. — Total Length.
1		Acushnet,	—	—	—	—	—	—	—
2		Albany Street Freight,	—	—	—	—	.856	.076	.932
3		Arlington,	—	—	—	—	1.576	—	1.576
4		Brookton,	20	3	91	16	6.050	.570	6.620
5		Black Rocks & Salisbury Beach,	5	—	*	—	1.684	.095	1.779
6		Boston & Chelsea,	—	—	—	—	4.116	.038	4.154
7		Cambridge,	245	19	1,435	461	42.978	.880	43.858
8		Charles River,	48	—	276	52	9.251	1.553	10.804
9		Globe,	38	9	149	49	9.475	1.743	11.218
10		Haverhill & Groveland,	7	3	16	10	3.113	.167	3.280
11		Highland,	179	9	909	213	17.866	.990	18.856
12		Holyoke,	8	—	5	2	—	—	—
13		Lowell,	28	7	99	40	5.787	.674	6.461
14		Lynn & Boston,	134	10	608	143	30.227	4.505	34.732
15		Malden & Melrose,	—	—	—	—	3.832	.475	4.307
16		Merrimac Valley,	20	4	67	16	5.800	.900	6.700
17		Metropolitan,	664	26	3,183	969	71.410	6.707	78.117

18	Middlesex,	136	5	601	151	16,289	2,028	18,317
19	Naumkeag,	57	33	140	56	4,091	1,211	5,302
20	New Bedford & Fairhaven, .	38	15	136	35	6,880	.340	7,420
21	Newburyport & Amesbury,†	12	4	53	20	6,600	.200	6,800
22	Northampton,	6	3	24	5	3,200	.030	3,230
23	North Woburn,	4	2	4	4	2,690	—	2,690
24	Salem,	—	—	—	—	7,785	.763	8,548
25	Salem & Danvers,	12	2	48	13	5,651	.024	5,675
26	Somerville,	—	—	—	—	4,879	.526	5,405
27	South Boston,	193	—	857	274	13,015	.205	13,220
28	Springfield,	25	9	110	35	8,080	.190	8,270
29	Stoneham,	9	2	28	9	2,680	.050	2,730
30	Taunton,	14	3	44	20	4,000	.284	4,374
31	Waltham & Newton,	6	5	14	5	3,211	.160	3,371
32	Winnimmet,	—	—	—	—	1,004	.964	1,968
33	Worcester,	18	5	95	26	5,330	.470	5,800
	Total,	1,926	178	8,996	2,624	309,496	27,018	336,514

† Lessee's Account.

* One Dummy engine.

ABSTRACT OF STREET RAILWAY RETURNS — Continued.

	STREET RAILWAYS	MILEAGE, ETC.				ACCIDENTS.		
		54. — Miles run.	55. — Passengers Carried.	56. — Round Trips.	57. — Average No. of Passengers per Round Trip.	58. — Persons Employed.	59. — Fatal.	60. — Injured.
1	Aetshnet,	—	—	—	—	—	—	—
2	Albany Street Freight,	—	—	—	—	—	—	—
3	Arlington,	—	—	—	—	—	—	—
4	Brockton,	128,230	841,262	16,689	50	26	—	2
5	Black Rocks & Salisbury B'ch,	5,096	65,000	1,274	—	6	—	—
6	Boston & Chelsea,	—	—	—	—	—	—	—
7	Cambridge,	2,245,534	11,949,698	286,933	42	497	1	5
8	Charles River,	545,418	2,446,152	74,056	33	131	—	6
9	Globe,	290,661	1,748,247	62,138	28	87	—	2
10	Haverhill & Groveland,	39,500	207,537	8,225	25	6	—	—
11	Hingham,	1,670,347	10,452,441	245,428	43	356	—	2
12	Holyoke,	—	—	—	—	—	—	—
13	Lowell,	196,510	1,340,215	19,655	68	48	—	—
14	Lynn & Boston,	1,052,296	6,364,009	125,931	50	259	—	4
15	Malden & Melrose,	—	—	—	—	—	—	—
16	Merrimac Valley,	171,024	721,816	34,209	21	25	—	—
17	Metropolitan,	6,046,879	34,574,135	909,295	38	1,499	1	19

18	Middlesex,	1,047,411	7,099,892	158,487	45	275	9
19	Naumkeag,	235,777	1,468,292	30,618	48	53	5
20	New Bedford & Fairhaven, .	313,451	1,591,890	60,226	26	51	5
21	Newburyport & Amesbury,*	67,430	334,482	6,130	55	18	2
22	Northampton,	38,796	131,514	6,117	22	7	-
23	North Woburn,	19,717	72,849	3,665	20	3	2
24	Salem,	-	-	-	-	-	-
25	Salem & Danvers,	21,857	126,794	2,269	56	26	5
26	Somerville,	-	-	-	-	-	-
27	South Boston,	1,470,261	9,706,299	241,963	41	349	8
28	Springfield,	245,934	1,322,319	50,982	26	52	-
29	Stoneham,	48,500	223,363	9,700	23	14	-
30	Taunton,	95,358	503,924	16,493	31	14	-
31	Waltham & Newton,	29,470	202,853	3,839	52	6	-
32	Winnisimmet,	-	-	-	-	-	-
33	Worcester,	207,912	1,399,276	42,807	33	38	-
Total,		16,233,369	94,894,259	2,417,129	39	3,846	76

* Lessee's Account.

COMPARATIVE STATEMENTS FROM STREET RAILWAY RETURNS.

	STREET RAILWAYS.	PER MILE OF ROAD OWNED.			PER MILE OF ROAD OPERATED.			
		61.— Capital Stock Paid In.	62.— Net Debt.	63.— Cost of Construction.	64.— Cost of Equipment.	65.— Repairs of Road-bed and Track.	66.— Repairs of Equipment.	67.— Renewals of Horses.
1	Acushnet,	—	—	—	—	—	—	—
2	Albany Street Freight,	\$58,411 20	—	\$57,320 40	—	—	—	—
3	Arlington,	8,629 44	—	8,629 44	—	—	—	—
4	Brockton,	24,793 39	—	19,959 83	\$1,434 01	\$157 24	\$217 66	—
5	Black Rocks & Salisbury Beach,	—	—	—	—	—	—	—
6	Boston & Chelsea,	29,397 47	—	29,397 47	—	—	—	—
7	Cambridge,	37,228 35	\$14,056 71	25,642 04	9,922 41	203 06	761 12	\$319 36
8	Charles River,	27,024 11	14,772 43	19,490 02	7,882 88	21 09	435 29	496 81
9	Globe,	21,108 18	438 38	14,170 11	5,055 10	226 00	802 65	154 94
10	Haverhill & Groveland,	7,709 60	1,625 81	4,882 75	2,938 72	369 78	214 75	147 76
11	Highland,	41,979 18	26,976 09	22,564 17	16,995 77	440 59	1,450 34	755 88
12	Holyoke,	—	—	—	—	—	—	—
13	Lowell,	16,087 78	—	12,690 76	4,241 53	501 79	1,202 95	578 64
14	Lynn & Boston,	9,924 60	9,895 60	12,601 04	4,136 69	440 78	924 15	565 55
15	Malden & Melrose,	43,188 94	—	19,498 83	—	—	—	—
16	Merrimac Valley,	8,620 69	814 42	3,448 28	1,551 72	1,106 34	643 60	203 88
17	Metropolitan,	21,005 46	23,078 34	21,697 82	12,326 04	503 10	1,749 66	696 55

18	Middlesex,	39,904 23	21,992 43	35,102 99	9,580 90	105 21	1,148 82	494 15
19	Naumkeag,	-	-	-	5,901 34	742 97	598 77	136 54
20	New Bedford & Fairhaven,	19,622 09	376 81	13,494 87	5,917 56	220 79	1,027 29	477 47
21	Newburyport & Amesbury,	-	-	-	-	-	-	-
22	Northampton,	15,625 00	1,673 36	14,421 88	1,822 06	311 95	314 23	134 69
23	North Woburn,	9,293 70	1,729 72	9,498 14	724 90	164 98	231 21	85 50
24	Salem,	19,267 82	4,813 43	26,148 94	-	-	-	-
25	Salem & Danvers,	10,610 47	-	6,031 69	2,763 07	-	41 68	-
26	Somerville,	31,358 90	-	31,358 90	-	-	-	-
27	South Boston,	57,625 82	9,262 28	23,260 71	18,641 25	656 67	2,098 54	1,324 32
28	Springfield,	15,470 30	1,885 87	11,334 76	4,568 67	669 93	559 43	210 27
29	Stoneham,	12,313 43	-	12,537 31	3,126 38	902 94	774 31	130 60
30	Taunton,	9,779 95	103 04	5,867 97	3,636 92	411 43	468 14	4 89
31	Waltham & Newton,	9,342 85	4,766 94	11,676 55	2,411 82	448 49	59 37	-
32	Winnimmet,	50,000 00	-	50,000 00	-	-	-	-
33	Worcester,	7,504 69	11,662 98	15,086 49	6,117 91	852 55	1,138 40	491 92
	Average,	\$24,983 17	\$12,546 64	\$19,736 10	\$8,937 90	\$401 34	\$1,072 10	\$490 20

18	Middlesex,	15,418 46	2 31	.3497	.0516	11,681 10	1 75
19	Naumkeag,	7,523 85	2 92	.3786	.0609	5,860 83	2 27
20	New Bedford & Fairhaven,	11,495 53	1 31	.2527	.0496	9,359 35	1 07
21	Newburyport & Amesbury,	-	-	-	-	-	-
22	Northampton,	3,404 31	1 78	.2808	.0828	2,962 97	1 55
23	North Woburn,	1,300 29	95	.1774	.0480	1,351 72	99
24	Salem,	-	-	-	-	-	-
25	Salem & Danvers,*	1,516 01	4 60	.4772	.0821	754 39	2 28
26	Somerville,	-	-	-	-	-	-
27	South Boston,	30,627 79	1 96	.3226	.0489	25,212 60	1 61
28	Springfield,	9,148 63	1 45	.3005	.0559	6,973 56	1 10
29	Stoneham,	7,521 39	2 08	.4156	.0904	5,946 50	1 64
30	Taunton,	5,911 07	1 46	.2535	.0479	4,808 81	1 19
31	Waltham & Newton,	3,728 47	3 12	.4062	.0590	2,893 88	2 42
32	Winnisimmet,	-	-	-	-	-	-
33	Worcester,	12,767 47	1 59	.3271	.0486	9,543 46	1 19
Average,		\$14,613 40	\$2 03	\$0.3024	\$0.0517	\$11,861 95	\$1 65

* Operated for 3 months and 3 days.

COMPARATIVE STATEMENTS OF STREET RAILWAY RETURNS — Concluded.

		STREET RAILWAYS.	EXPENSES — Continued.		NET INCOME.				
			74. — Per Mile Run.	75.—Per Passenger Carried.	76. — Per Mile Operated.	77.— Per Round Trip.	78.—Per Mile Run.	79.—Per Passenger Carried.	
1	Acushnet,	.	.	.	.	.	.	.	.
2	Albany Street Freight,	.	.	.	.	.	.	.	.
3	Arlington,	.	.	.	.	.	.	.	.
4	Brockton,	.	.	.	.	.	.	.	.
5	Black Rocks & Salisbury Beach,	.	.	.	.	.	.	.	.
6	Boston & Chelsea,	.	.	.	.	.	.	.	.
7	Cambridge,	.	.	.	.	.	.	.	.
8	Charles River,	.	.	.	.	.	.	.	.
9	Globe,	.	.	.	.	.	.	.	.
10	Haverhill & Groveland,	.	.	.	.	.	.	.	.
11	Highland,	.	.	.	.	.	.	.	.
12	Holyoke,	.	.	.	.	.	.	.	.
13	Lowell,	.	.	.	.	.	.	.	.
14	Lynn & Boston,	.	.	.	.	.	.	.	.
15	Malden & Melrose,	.	.	.	.	.	.	.	.
16	Merrimac Valley .	.	.	.	.	.	.	.	.
17	Metropolitan,	.	.	.	.	.	.	.	.

TABULATED STATEMENT

COMPILED FROM

RETURNS OF RAILROADS.

RAILROADS AND BRANCHES. (BRANCHES IN ITALICS.)	WHERE LOCATED.		LENGTH.		DOUBLE TRACK.		SIDINGS.		7.—Total length com- puted as single track.
	From.	To.	1.—Total.	2.—In Mass.	3.—In Mass.	4.—Out of Mass.	5.—In Mass.	6.—Out of Mass.	
ASHBURNHAM,	Ashb'ham Junc.	Ash'm Centre,	2.500	2.500	-	-	.379	-	2.879
ATTLEBOROUGH BRANCH. (See <i>Boston & Providence</i>),	-	-	-	-	-	-	-	-	-
BERKSHIRE. (See <i>Housatonic</i>),	Boston,	Albany, N. Y.,	201.650	162.350	162.350	39.300	189.910	32.240	722.230
BOSTON & ALBANY,	Springfield,	Athol,	46.560	46.560	-	-	-	-	-
<i>Athol,</i>	Cottage Farm,	East Boston,	9.300	9.300	1.790	-	-	-	-
<i>Grand Junction,</i>	Riverside Junc.	Newton L. Falls,	1.100	1.100	-	-	-	-	-
<i>Newton Lower Falls,</i>	Beacon St., Bos- ton,	Cook St., Newton	6.890	6.890	6.430	-	-	-	-
<i>Newton Highlands,</i>	Natick,	Saxonville,	3.700	3.700	-	-	-	-	-
<i>Saxonville,</i>	S. Framingham,	Millford,	12.	12.	-	-	-	-	-
<i>Millford,</i>	Millbury Junc.,	Millbury Village,	3.	3.	-	-	-	-	-
<i>Chatham & Hudson,</i>	Chatham, N. Y.,	Hudson, N. Y.,	17.330	-	-	1.	-	-	-
North Brookfield,	E. Brookfield,	N. Brookfield,	4.160	4.160	-	-	.490	-	4.650
Pittsfield & North Adams,	Pittsfield,	North Adams,	18.650	18.650	-	-	4.640	-	23.290
Ware River,	Palmer,	Winchendon,	49.200	49.200	-	-	4.900	-	54.100
Spencer,	Spencer,	B. & A. R. R.,	2.165	2.165	-	-	.745	-	2.910
BOSTON, BARRE & GARDNER,	Worcester,	Winchendon,	36.530	36.530	-	-	9.830	-	46.360
BOSTON & LOWELL,	Boston,	Lowell,	26.750	26.750	26.750	-	50.330	-	163.340
<i>Lexington & Arlington,</i>	Medford Junc.,	Lexington,	9.250	9.250	-	-	-	-	-
<i>Stoneham,</i>	Woburn Junc.,	Stoneham,	2.500	2.500	-	-	-	-	-
<i>Woburn,</i>	Winchester,	Woburn Centre,	2.	2.	-	-	-	-	-
<i>Mystic,</i>	Milk Row Junc.,	Mystic Wharves,	2.250	2.250	-	-	-	-	-
<i>Laurence,</i>	-	In Wilmington,	3.210	3.210	-	-	-	-	-
<i>Middlesex Central,</i>	Lexington,	Concord,	11.080	11.080	-	-	-	-	-
<i>Salem & Lowell,</i>	Tewksbury,	Peabody,	16.800	16.800	-	-	-	-	-
<i>Lowell & Lawrence,</i>	Lowell,	S. Lawrence,	12.420	12.420	-	-	-	-	-

RAILROADS AND BRANCHES. (BRANCHES IN ITALICS.) (Continued.)	WHERE LOCATED.		LENGTH.		DOUBLE TRACK.		SIDINGS.		7.—Total length com- puted as single track.
	From.	To.	1.—Total.	2.—In Mass.	3.—In Mass.	4.—Out of Mass.	5.—In Mass.	6.—Out of Mass.	
DANVERS. (See <i>Boston & Maine</i>).	-	-	-	-	-	-	-	-	-
DORCHESTER & MILTON. (See <i>Old Colony</i>).	-	-	-	-	-	-	-	-	-
EASTERN.	Boston,	State Line, N. H.,	41.450	41.450	27.920	-	60.350	-	210.880
<i>East Boston,</i>	Revere,	East Boston,	3.470	3.470	1.560	-	-	-	-
<i>Saugus,</i>	Everett,	West Lynn,	9.550	9.550	-	-	-	-	-
<i>Marblehead,</i>	Salem,	Marblehead,	3.520	3.520	-	-	-	-	-
<i>Swampscott,</i>	Swampscott,	Marblehead,	3.960	3.960	-	-	-	-	-
<i>Lawrence,</i>	Salem,	Lawrence,	19.890	19.890	1.640	-	-	-	-
<i>Gloucester,</i>	Beverly,	Gloucester,	16.940	16.940	-	-	-	-	-
<i>Salisbury,</i>	Salisbury,	Amesbury,	3.790	3.790	-	-	-	-	-
<i>Asbury Grove,</i>	Hamilton Sta'n,	Asbury Grove,	1.060	1.060	-	-	-	-	-
<i>Essex,</i>	Wenham,	Essex,	5.480	5.480	-	-	-	-	-
<i>Charlestown,</i>	-	In Charlestown,	1.090	1.090	1.090	-	-	-	-
<i>South Reading,</i>	Peabody,	Wakefield Junc.,	8.120	8.120	-	-	-	-	-
<i>Chelsea Beach,</i>	Oak Island Junc.	Saugus River J.,	1.780	1.780	-	-	.540	-	2.320
<i>Newburyport City,</i>	E. & B. & M. R.R.	Wharves,	2.080	2.080	.150	-	1.800	-	4.030
FALL RIVER. (See <i>Old Colony</i>).	New Bedford,	Fall River,	-	-	-	-	-	-	-
FALL RIVER, WARREN & PROVIDENCE (owned by <i>Old Colony Railroad Co.</i>)	Fall River,	Warren, R. I.,	5.794	3.662	-	-	.040	.480	6.314
FITCHBURG.	Boston,	Fitchburg,	50.	50.	50.	-	63.450	1.540	208.990
<i>Ice,</i>	-	In Charlestown,	.680	.680	.680	-	-	-	-
<i>Watertown Branch,</i>	N. Cambridge,	Waltham,	6.600	6.600	-	-	-	-	-
<i>Lancaster & Marlborough</i>	South Acton,	Marlborough,	12.420	12.420	-	-	-	-	-
<i>Peterborough & Shirley,</i>	Ayer,	Greenville, N. H.,	23.620	14.250	-	-	-	-	-

	Fitchburg, Greenfield, N. Abington,	Greenfield, Turner's Falls, South Hanover,	56. 2,800 8.	52,140	— — —	31,190 — 1.	142,130 — 9.
Vermont & Massachusetts, <i>Turner's Falls</i> ,							
PLANOET BRANCH,	—	—	—	—	—	—	—
HOLYOKE & WESTFIELD. (See <i>N. Haven & Northampton</i>),	—	—	—	—	—	—	—
HORN POND BRANCH. (See <i>Boston & Lowell</i>),	—	—	—	—	—	—	—
HOUSATONIC (Ct.),	—	—	—	—	—	—	—
Berkshire,	—	—	—	—	—	—	—
Stockbridge & Pittsfield,	W. Stockbridge,	State Line of Ct.,	22.	—	—	2,810	24,810
West Stockbridge,	W. Stockbridge,	Pittsfield,	22.	—	—	4,420	26,420
LOWELL & ANDOVER. (See <i>Boston & Maine</i>),	—	State Line, N.Y.,	2,750	—	—	3,750	6,500
<i>Branch to Framingham</i>	—	—	—	—	—	—	—
<i>& Lowell Railroad.</i>	—	—	—	—	—	—	—
<i>Branch, to Boston &</i>	—	—	—	—	—	—	—
<i>Lowell Railroad,</i>	—	—	—	—	—	—	—
LOWELL & FRAMINGHAM. (See <i>Old Colony</i>),	—	—	—	—	—	—	—
MASSACHUSETTS CENTRAL,	Cambridge,	—	44,030	—	—	3,130	47,160
MILFORD, FRANKLIN & PROV. (See <i>Milford & Woonsocket</i>),	—	—	—	—	—	—	—
MILFORD & WOONSOCKET,	Ashland,	Bellingham,	15,327	—	—	1,475	16,802
Milford, Franklin & Prov.	Franklin,	Bellingham,	4,600	—	—	.407	5,007
MONADNOCK. (See <i>Cheshire</i>),	—	—	—	—	—	—	—
NANTASKET BEACH,	Old Colony Hse,	Pemberton, Hull,	6,933	—	—	2,535	9,468
NASHUA, ACTON & BOSTON (op- erated by <i>Concord, N.H.</i>),	Acton,	Nashua,	20,210	—	—	.850	22,740
NASHUA & LOWELL. (See <i>Boston & Lowell</i>),	—	—	—	—	—	—	—
NEWBURYPORT. (See <i>Bost. & Me.</i>),	—	—	—	—	—	—	—

RAILROADS AND BRANCHES. (BRANCHES IN ITALICS.) (Continued.)	WHERE LOCATED.		LENGTH.		DOUBLE TRACK.		SIDINGS.		7.—Total length com- puted as single track.
	From.	To.	1.—Total.	2.—In Mass.	3.—In Mass.	4.—Out of Mass.	5.— In Mass.	6.— Out of Mass.	
NEWBURYPORT CITY. (See <i>Eastern</i> .)									
NEW HAVEN & NORTHAMPTON, <i>Collinsville</i> , (Ct.)	New Haven, Ct.,	Bardwell's,	94.640	43.380	—	—	13.820	14.340	—
<i>Turiffville</i> , . . .	Farmington, Ct.,	N. Hartford, Ct.,	14.090	—	—	—	—	—	155.510
<i>Northampton</i> , . . .	Simsbury, Ct.,	Tariffville, Ct.,	1.040	—	—	—	—	—	—
<i>Turner's Falls</i> , . . .	Northampton, .	Williamsburg,	7.510	7.510	—	—	—	—	—
Holyoke & Westfield, . . .	So. Deerfield, .	Turner's Falls, .	10.070	10.070	—	—	—	—	—
NEW LONDON NORTHERN (op- erated by J. Gregory Smith and others), . . .	Westfield, . .	Holyoke, . .	14.320	14.320	—	—	2.900	—	17.220
NEW YORK & NEW ENGLAND, {									
<i>Woonsocket Division</i> , . . .	New London, Ct.,	Brattleboro, Vt.,	121.	54.	—	—	7.750	15.730	144.480
<i>Southbridge</i> , . . .	Boston, . .	Hopewell Jc. N.Y.,	215.040	52.	52 000	56.100	36,900	78.340	549.110
<i>New Dedham</i> , . . .	Wicopee Junc.,	Fishkill-on-Hud.	1.800	—	—	—	—	—	—
<i>Dorrance Street</i> , . . .	Providence,	Williamantic, Ct.,	58.500	—	—	—	—	—	—
<i>Ridge Hill</i> , . . .	Newton H'ds,	Woonsocket, R. I.,	28.410	27.410	—	—	—	—	—
<i>Hartford Freight</i> , . . .	E. Thompson, Ct.,	Southbridge, .	17.370	12.020	—	—	—	—	—
Rhode Isl'd & Massachusetts, Springfield & New London, NEW YORK, NEW HAVEN & HARTFORD, . . .	Elmwood Jct., .	Dedham, . .	1.520	1.520	—	—	—	—	—
<i>N. Britain & Berlin</i> (Ct.), . .	— . .	In Providence, .	.820	—	—	—	—	—	—
<i>Middletown & Berlin</i> (Ct.), . .	— . .	— . .	1.640	1.640	—	—	—	—	—
<i>W. Locks & Suffield</i> (Ct.), . .	— . .	— . .	.670	—	—	—	—	—	—
	Franklin, . .	In Hartford, .	6.620	6.620	—	—	1.006	—	7.626
	Springfield, .	State Line of R.I.,	7.500	7.500	—	—	.500	—	8.
	Harlem Jct., N.Y.	State Line of Ct.,							
	Berlin, Ct., . .	Springfield, .	123.200	5.870	5.870	117.330	5.429	74.945	344.474
	Berlin, Ct., . .	New Britain, Ct.,	3.	—	—	—	—	—	—
	Middletown, Ct.,	Middletown, Ct.,	10.	—	—	—	—	—	—
	Windsor Locks,	Suffield, Ct., .	4.500	—	—	—	—	—	—

NORWICH & WORCESTER, Allyn's Point (Ct.), Connection N.L.N.R.R. NORTH BROOKFIELD. (See Boston & Albany),	Worcester, Norwich, - - Boston, S. Braintree, Braintree, S. Braintree, Middleborough, Fitchburg, Middleborough, - S. Abington, Atlantic, Cohasset Nar'ws, Yarmouth, Harrison Sq., Bovenville St'n, S Marlborough, Taunton, - Fairhaven, Taunton, Pratt's Junction, - - Neponset, S. Framingham, New Bedford,	Norwich, Ct., Allyn's Point, In Norwich, - Provincetown, Plymouth, Kingston, Newport, Somerset Junc., New Bedford, Taunton, In Stoughton, Bridgewater, Braintree, Wood's Holl, Hyannis, Milton L. Mills, - Marlborough, Weir Village, In New Bedford, Tremont Stat'n, Attleborough, Sterling Junc., In Lancaster, In Framingham, Mattapan, Lowell, Fall River,	59,750 6,300 .430 - 120,010 26,040 32,300 57,970 14,960 91,020 8,040 1,650 7,330 5,410 17,540 5,050 2,390 2,160 1,470 .610 .350 15,170 8,600 5,670 1,630 .810 3,300 26,120 12,250 - - - - - -	18,500 -
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WORCESTER, NASHUA & ROCHESTER,	Worcester, .	Rochester, N.H.,	94.480	39.460	18.130	-	12.500	7.220	132.320
NARROW GAUGE.									
BOSTON, REVERE BEACH & LYNN,	East Boston, .	Lynn, .	8.800	8.800	6.700	6.700	2.250	-	17.750
GRAFTON CENTRE,	Grafton Station, .	Grafton Centre, .	3.330	3.330	-	-	.100	-	3.100
MARTHA'S VINEYARD, . . .	Oak Bluffs, .	Katama, .	8.330	8.330	-	-	.500	-	9.280
Katama,	Katama, .	South Beach, .	.450	.450	-	-	-	-	-
NANTUCKET,	Nantucket, .	Siasconset, .	11.000	11.000	-	-	.700	-	11.700
WORCESTER & SHREWSBURY, .	Worcester, .	L. Quinsigamond, .	2.700	2.700	-	-	-	-	2.700
Total, . . . . .	. . . . .	. . . . .	2,851.743	1,973.708	667.889	273.738	832.393	332.814	1,958.577

	8.—BOSTON & ALBANY.	9. FITCHBURG.	10.—BOSTON & LOWELL.	11.—BOSTON & MAINE.	12.—EASTERN.
CAPITAL STOCK.					
Amount paid in,	\$20,000,000 00	\$1,950,000 00	\$3,792,000 00	\$6,921,274 52	\$1,997,600 00
Number of stockholders,	6,590	2,896	1,090	4,216	1,687
Stockholders in Massachusetts,	5,703	2,488	930	2,438	1,104
Amount of stock held in Massachusetts,	\$17,443,000 00	\$4,319,500 00	\$3,316,500 00	\$4,893,700 00	\$4,416,800 00
DEBT.					
Funded debt,	\$10,858,000 00	\$4,000,000 00	\$3,546,400 00	\$3,500,000 00	\$13,627,320 62
Unfunded debt,	762,204 69	803,231 35	1,796,665 18	1,076,289 64	1,231,835 79
TOTAL GROSS DEBT,	11,620,204 69	4,803,231 35	5,343,065 18	4,576,289 64	14,859,156 41
PERMANENT INVESTMENTS.					
Construction,	\$25,218,474 78	\$4,595,933 54	\$6,593,126 89	\$9,512,780 26	\$14,553,653 00
Equipment,	3,145,400 00	2,509,806 36	850,374 87	1,308,180 00	1,549,366 99
Other property,	1,652,500 96	1,331,542 35	1,221,960 58	786,836 67	3,078,900 33
TOTAL PERMANENT INVESTMENTS,	30,016,375 74	8,439,382 25	8,665,462 34	11,607,796 93	19,181,920 32
Cash and cash assets,	2,554,587 94	1,593,513 60	935,017 34	1,502,684 30	847,632 02
TOTAL PROPERTY AND ASSETS,	32,570,963 68	10,032,895 85	9,600,479 68	13,110,481 23	20,029,552 34
REVENUE FOR THE YEAR.					
From local passengers,	\$2,035,281 98	\$657,933 65	\$998,980 41	\$1,497,845 28	\$1,601,344 56
through passengers,	1,158,169 74	243,819 73	302,132 60	206,382 45	245,104 11
express and extra baggage,	222,204 35	60,489 56	70,407 05	79,156 89	81,160 75
mails,	141,031 88	30,198 42	25,405 90	25,321 19	63,100 92
other sources passenger department, <i>Total earnings passenger department,</i>	3,556,687 95	992,441 36	1,396,925 96	1,808,705 81	1,990,710 34

From local freight, through freight,	2,055,408 31	647,764 39	717,871 78	826,647 38	1,091,274 16
other sources freight department, <i>Total earnings freight department,</i>	2,034,893 67	1,127,483 37	664,273 09	269,016 23	302,065 71
TOTAL TRANSPORTATION EARNINGS,	4,093,001 98	1,775,247 76	1,382,144 87	1,095,663 61	1,393,339 87
From rents for use of road,	7,046,989 93	2,767,689 12	2,779,070 83	2,904,369 42	3,384,050 21
all other sources,	—	51,000 00	—	20,500 00	11,375 60
TOTAL INCOME FROM ALL SOURCES,	501,723 41	37,968 21	85,057 07	80,685 03	176,168 60
	8,148,713 34	2,856,657 33	2,864,127 90	3,005,554 45	3,571,594 41
EXPENSES.					
Transportation expenses,	\$5,263,026 54	\$1,979,608 78	\$1,961,251 76	\$1,954,117 17	\$2,235,325 24
Taxes,	522,850 44	151,795 94	113,041 36	126,757 28	72,261 73
TOTAL EXPENSES,	5,785,876 98	2,131,404 72	2,074,293 12	2,080,874 45	2,307,586 97
NET INCOME, DIVIDENDS, ETC.					
Net income,	\$2,362,836 36	\$725,252 61	\$789,834 78	\$924,680 00	\$1,264,007 44
Rents,	75,000 00	246,809 00	323,406 20	90,125 00	218,330 00
Interest accrued,	662,900 00	212,331 70	251,859 02	270,467 40	855,554 91
Dividends earned,	1,624,936 36	266,111 91	214,569 56	564,087 60	190,122 53
Per cent.,	8.1	5.4	5.7	8.2	3.8
Dividends declared,	1,547,804 00	272,250 00	209,700 00	560,000 00	—
Per cent.,	8.0†	5.5	5.5	8.0	—
Balance for the year,	77,132 36	6,138 09‡	4,869 56	4,087 60	190,122 53
Surplus last year,	2,798,795 17*	285,802 59	460,544 94	1,608,829 47	17,326 60‡
Surplus Sept. 30, 1884,	950,758 99†	279,664 50	465,414 50	1,612,917 07	172,795 93

* Seventeen thousand five hundred and eighty-eight shares of stock, in value \$2,814,080.00, distributed to the stockholders by vote of the Directors, Sept. 27, 1883, at the price paid the State, and deducted from the surplus account.

† On stock other than that held in the Treasury of the Company (\$1,041,353.00.)

‡ Including improvement fund of \$388,911.46.

Δ Deficit.

	8. — DOSTON & ALBANY — Con.	9. — FITCHBERG — Con.	10. — BOSTON & LOWELL — Con.	11. — BOSTON & MAINE — Con.	12. — EASTERN — Con.
MILEAGE, TRAFFIC, ETC.					
Passenger-train mileage,	1,949,970	981,955	1,305,150	1,289,545	1,401,540
Freight-train mileage,	3,010,215	1,004,364	610,162	540,028	740,685
<i>Total revenue-train mileage,</i>	4,960,185	1,986,312	1,915,312	1,829,573	2,142,225
Switching-train mileage,	520,893	485,405	519,357	269,336	491,507
Other train mileage,	198,982	11,908	76,512	79,272	97,144
TOTAL TRAIN MILEAGE,	5,680,060	2,483,632	2,511,181	2,178,181	2,730,876
Number season-ticket passengers,	784,503	321,518	875,392	1,147,446	1,851,916
Number local passengers (including season),	7,791,159	3,317,866	4,654,597	6,721,688	7,702,124
Number through passengers,*	1,003,253	225,070	325,346	332,621	203,729
<i>Total number of passengers carried,</i>	8,794,412	3,542,936	4,979,943	7,054,309	7,905,853
Local passenger mileage,	111,944,681	41,837,996	48,162,775	77,318,927	91,513,377
Through passenger mileage,*	55,457,760	12,734,014	13,180,281	12,268,639	16,933,778
<i>Total passenger mileage,</i>	167,402,441	54,622,010	61,343,056	89,587,566	108,497,155
Tons of local freight carried,	1,695,585	624,939	703,930	623,563	1,039,146
Tons of through freight carried,*	1,629,932	1,487,216	773,128	334,769	277,556
<i>Total tons of freight carried,</i>	3,325,517	2,112,155	1,477,058	958,332	1,316,702
Local freight mileage,	114,144,891	18,810,068	18,381,885	21,933,747	50,403,692
Through freight mileage,*	260,202,564	144,246,394	41,046,106	23,003,797	27,233,962
<i>Total freight mileage,</i>	374,347,455	163,056,462	59,427,991	44,937,544	77,639,654
Av. rate of fare per mile, local passengers, through passengers,*	2.00 cents.	1.89 cents.	2.43 cents.	2.27 cents.	2.24 cents.
season-ticket passengers,	2.09 "	1.91 "	2.29 "	1.68 "	1.56 "
ALL PASSENGERS,	0.67 "	0.65 "	0.81 "	0.74 "	0.69 "
Av. rate of freight per mile, local freight, through freight,*	1.91 "	1.65 "	2.12 "	1.90 "	1.72 "
ALL FREIGHT,	1.81 "	3.44 "	3.90 "	3.57 "	2.08 "
	0.78 "	0.78 "	1.62 "	1.17 "	1.31 "
	1.09 "	1.09 "	2.33 "	2.34 "	1.81 "

Passengers to Boston (including season),	2,754,575	1,233,046	1,946,790	2,573,579	2,469,598
Passengers from Boston (including season),	2,818,427	1,220,976	2,026,251	2,627,198	2,486,544
Season-ticket passengers to and from Bost'n,	686,222	186,366	792,828	889,358	1,245,522
EQUIPMENT.					
Number of locomotives,	243	100	147	92	115
passenger cars,	210	114	145	160	178
parlor and sleeping cars,	15	—	5	10	1
mail, baggage, and express cars,	51	31	80	35	45
freight cars (basis 8 wheels),	5,520	3,166	3,001	1,637	1,961
other cars,	650	167	31	231	180
GENERAL INFORMATION, ETC.					
Total miles of road operated,	384.37	189.12	549.93	204.20	284.95
Same in Massachusetts,	927.74	179.75	124.13	84.70	122.34
Average number of persons employed,	5,138	1,937	2,851	2,122	2,494

* To and from other roads.

	13.—BOSTON & PROVIDENCE.	14.—NEW YORK & NEW ENGLAND.	15.—OLD COLONY	16.—ASHBURNHAM.	17.—BOSTON, BARRE & GARDNER.
CAPITAL STOCK.					
Amount paid in,	\$4,000,000 00	\$20,000,000 00*	\$10,442,800 00†	\$30,000 00	\$875,277 73
Number of stockholders,	1,653	1,393†	5,638	3	194
Stockholders in Massachusetts,	1,315	1,039†	5,271	3	186
Amount of stock held in Massachusetts,	\$3,341,900 00	\$7,619,000 00†	\$9,757,500 00	\$30,000 00	\$872,140 00
DEBT.					
Funded debt,	\$860,000 00	\$15,801,317 88	\$9,044,100 00	\$6,000 00	\$633,600 00
Unfunded debt,	225,812 04	2,181,319 83	1,066,318 32	98 81	211,172 32
TOTAL GROSS DEBT,	1,085,812 04	17,982,637 71	10,110,418 32	6,098 81	844,772 32
PERMANENT INVESTMENTS.					
Construction,	\$4,688,774 38	\$32,384,192 48	\$16,532,854 49	\$30,000 00	\$1,396,639 65
Equipment,	207,400 00	3,795,672 37	2,165,759 08	6,000 00	—
Other property,	282,606 50	484,190 40	1,656,049 52	—	1,461 67
TOTAL PERMANENT INVESTMENTS,	5,178,780 88	36,664,055 25	20,354,663 09	36,000 00	1,398,101 32
Cash and cash assets,	325,502 41	818,708 28	1,127,744 39	—	71,381 44
TOTAL PROPERTY AND ASSETS,	5,504,283 29	37,482,763 53	21,482,407 48	36,000 00	1,469,482 76
REVENUE FOR THE YEAR.					
From local passengers,	\$864,613 55	\$799,524 47	\$1,739,223 60	\$2,053 74	\$44,581 33
through passengers,	171,932 73	290,962 91	448,973 00	—	30,028 36
express and extra baggage,	39,953 91	104,313 41	125,798 44	221 16	3,261 03
mails,	13,310 64	45,627 18	38,739 98	123 53	2,982 76
other sources passenger department,	—	—	—	—	—
Total earnings passenger department,	1,089,810 83	1,240,427 97	2,352,735 02	2,403 43	80,853 48

From local freight,	360,966 00	638,241 38	1,138,496 06	3,468 90	25,334 98
through freight,	253,584 42	1,317,444 45	603,363 86	-	73,501 61
other sources freight department,	-	-	-	-	320 92
<i>Total earnings freight department,</i>	614,500 42	1,955,685 83	1,741,859 92	3,468 90	99,757 51
TOTAL TRANSPORTATION EARNINGS,	1,704,311 25	3,196,113 80	4,094,594 94	5,872 33	180,610 99
From rents for use of road,	-	-	8,600 00	-	-
all other sources,	22,836 69	165,919 17	243,334 19	-	1,295 01
TOTAL INCOME FROM ALL SOURCES,	1,727,147 94	3,362,032 97	4,341,529 13	5,872 33	181,906 00
EXPENSES.					
Transportation expenses,	\$1,250,287 17	\$2,816,609 64	\$2,744,918 90	\$5,015 53	\$154,750 50
Taxes,	103,831 85	125,016 40	199,363 35	89 54	688 97
TOTAL EXPENSES,	1,363,119 02	2,941,626 04	2,944,277 25	5,105 07	155,439 47
NET INCOME, DIVIDENDS, ETC.					
Net Income,	\$364,028 92	\$420,406 93	\$1,397,251 88	\$767 26	\$26,466 53
Rents,	11,878 64	88,908 14	46,614 02	-	-
Interest accrued,	26,140 94	1,008,495 71	556,866 15	360 00	40,386 57
Dividends earned,	326,014 34	676,991 92	793,771 71	407 26	13,920 04d
Per cent.,	8.2	-	-	-	-
Dividends declared,	320,000 00	-	723,989 00	-	-
Per cent.,	8.0	-	7.0	-	-
Balance for the year,	6,014 34	676,991 92d	69,782 71	407 26	13,920 04d
Surplus last year,	412,456 91	177,117 74	853,586 45	506 07d	236,647 27d
Surplus Sept. 30, 1884,	418,471 25	499,874 18d	923,369 16	98 81d	220,567 29d

* The amount of the "Berdell Bonds," at which the capital stock was fixed under the terms of the mortgage, and which are exchangeable only for capital stock.

† Not including \$3,820.00 stock of B., C., F. & N. B. R. Co. unconverted.

‡ Not including holders of "Berdell Bonds" unexchanged.

d Deficit.

	13. — BOSTON & PROVIDENCE — Con.	14. — NEW YORK & NEW ENGLAND — Con.	15. — Old COLONY — Con.	16. — ASHBURNHAM — Con.	17. — BOSTON, BARRE & GARDNER — Con.
MILEAGE, TRAFFIC, ETC.					
Passenger-train mileage,	727,348	1,218,675	1,629,344	7,800	78,935
Freight-train mileage,	246,298	1,131,383	799,610	—	42,557
Total revenue-train mileage,	973,646	2,350,058	2,428,954	7,800	121,492
Switching-train mileage,	58,299	620,121	518,383	—	4,000
Other train mileage,	—	52,021	176,637	—	1,500
TOTAL TRAIN MILEAGE,	1,081,945	3,022,200	3,123,974	7,800	126,992
Number season-ticket passengers,	530,118	818,591	1,991,345	—	27,220
Number local passengers (including season),	5,201,399	3,764,400	6,879,069	19,221	127,413
Number through passengers,*	281,308	603,690	947,432	—	45,083
Total number of passengers carried,	5,482,707	4,368,090	7,826,501	19,221	172,496
Local passenger mileage,	47,499,958	40,477,233	94,945,831	48,052	1,887,151
Through passenger mileage,*	7,700,750	13,822,083	21,800,007	—	996,251
Total passenger mileage,	55,200,708	54,299,316	116,745,901	48,052	2,883,402
Tons of local freight carried,	402,757	469,907	997,671	6,185	26,526
Tons of through freight carried,*	330,011	1,316,624	599,377	—	139,528
Total tons of freight carried,	732,768	1,786,531	1,597,048	6,185	166,054
Local freight mileage,	10,755,396	18,681,514	30,298,128	15,462	363,670
Through freight mileage,*	11,059,087	119,852,778	27,601,744	—	3,494,793
Total freight mileage,	21,814,483	138,534,292	57,899,872	15,462	3,858,463
Average rate of fare per mile, local passengers through passengers,*	1.94 cents.	2.19 cents.	2.17 cents.	—	3.47 cents.
season-ticket passengers,	2.26 "	2.11 "	2.05 "	—	3.02 "
ALL PASSENGERS,	0.91 "	0.76 "	0.70 "	—	1.26 "
Average rate of freight per mile, local freight, through freight,*	1.88 "	2.01 "	1.87 "	—	2.81 "
ALL FREIGHT,	3.36 "	3.42 "	4.20 "	—	7.13 "
	2.29 "	1.10 "	2.10 "	—	2.10 "
	2.82 "	1.41 "	3.00 "	—	2.58 "

Passengers to Boston (including season), .	2,068,260	978,466	2,255,209	-	-
Passengers from Boston (including season)	2,065,657	969,713	2,279,128	-	-
Season-ticket passengers to and from Boston,	371,802	265,468	1,264,879	-	-
EQUIPMENT.					
Number of locomotives,	57	147	125	1	8†
passenger cars,	150	150	228	1	7
parlor and sleeping cars,	22†	2	7		-
mail, baggage, and express cars,	25	41	40		4
freight cars (basis 8 wheels),	503	3,550	2,294		75
other cars,	371	8	8		21
GENERAL INFORMATION, ETC.					
Total miles of road operated,	67,752	378.45	468.32	2,500	36.53
Same in Massachusetts,	57,331	108.86	452.13	2,500	36.53
Average number of persons employed,	959	3,796	2,965	3	130

To and from other roads.

Equipment leased.

Line cars 8 per cent. owned.

	18.—BOSTON, WINTHROP & SHORE.	19.—CHESHIRE.	20.—CONNECTICUT RIVER.	21.—FALL RIVER, WARREN & PROVIDENCE.	22.—HANOVER BRANCH.
CAPITAL STOCK.					
Amount paid in,	\$231,800 00	\$2,153,300 00	\$2,370,000 00	\$150,000 00	\$123,350 00
Number of stockholders,	69	505	889	27	101
Stockholders in Massachusetts,	66	377	707	11	97
Amount of stock held in Massachusetts,	\$194,800 00	\$1,621,600 00	\$1,914,300 00	\$103,300 00	\$121,800 00
DEBT.					
Funded debt,	\$202,600 00	\$800,000 00	—	\$300,000 00	\$20,000 00
Unfunded debt,	17,544 79	25,201 50	\$888,060 67	2,640 09	954 00
TOTAL GROSS DEBT,	220,144 79	825,201 50	888,060 67	302,640 09	20,954 00
PERMANENT INVESTMENTS.					
Construction,	\$350,651 14	\$2,395,268 94	\$2,989,013 72	\$310,747 60	\$194,826 66
Equipment,	15,870 51	322,266 32	389,867 50	—	71,312 69
Other property,	75,000 00	—	99,610 00	—	2,565 00
TOTAL PERMANENT INVESTMENTS,	441,521 65	2,717,535 26	3,478,491 22	310,747 60	268,704 35
Cash and cash assets,	43 66	281,146 47	725,887 15	2,929 05	6,564 04
TOTAL PROPERTY AND ASSETS,	441,565 31	2,998,681 73	4,204,378 37	313,676 65	275,268 39
REVENUE FOR THE YEAR.					
From local passengers,	\$21,156 07	\$39,338 21	\$261,771 34	\$239 29	\$6,720 48
through passengers,	—	114,688 46	110,024 72	21,770 02	13,357 50
express and extra baggage,	—	7,500 00	15,677 75	1,500 00	1,920 03
mails,	—	9,105 31	11,787 00	481 96	150 00
car sources passenger department,	—	7,225 00	—	—	75 25
Total earnings passenger department,	21,156 07	177,856 98	399,260 81	23,994 27	22,223 26

From local freight,	220 00	20,265 38	135,955 02	9 37	1,443 46
through freight,	—	364,514 79	325,596 93	5,574 15	14,214 92
other sources freight department,	—	—	—	—	—
<i>Total earnings freight department,</i>	220 00	390,780 17	461,551 95	5,583 52	15,658 38
TOTAL TRANSPORTATION EARNINGS,	21,376 07	508,637 15	860,812 76	29,577 79	97,881 64
From rents for use of road,	—	—	—	—	—
all other sources,	—	18,047 87	40,195 21	66 50	1,053 92
TOTAL INCOME FROM ALL SOURCES,	21,376 07	586,685 02	901,007 97	29,644 29	38,935 56
EXPENSES.					
Transportation expenses,	\$19,816 85	\$386,634 68	\$568,224 29	\$16,981 84	\$27,079 47
Taxes,	132 44	19,274 49	62,989 91	266 07	968 75
TOTAL EXPENSES,	19,949 29	405,909 17	631,214 20	17,247 91	28,048 22
NET INCOME, DIVIDENDS, ETC.					
Net income,	\$1,426 78	\$180,775 85	\$269,793 77	\$12,396 38	\$10,887 34
Rents,	—	57,066 62	27,110 91	—	—
Interest accrued,	9,405 23	48,000 00	25,738 73	913 30	1,275 00
Dividends earned,	7,978 45 <i>d</i>	75,109 23	216,944 13	11,483 08	9,612 34
Per cent.,	—	3.5	9.1	—	7.7
Dividends declared,	—	63,000 00	189,600 00	—	7,428 00
Per cent.,	—	3.0	8.0	—	6.0
Balance for the year,	7,978 45 <i>d</i>	12,109 23	27,344 13	11,483 08	2,184 34
Surplus last year,	2,401 03 <i>d</i>	8,071 00	918,973 57	150,446 52 <i>d</i>	128,180 05
Surplus Sept. 30, 1884, .	10,379 48 <i>d</i>	20,180 23	946,317 70	138,963 44 <i>d</i>	130,364 39

d Deficit.

	18. — BOSTON, WINTHROP & SHORE — Con.	19. — CHESHIRE — Con.	20. — CONNECTICUT RIVER — Con.	21. — FALL RIVER, WARREN & PROVIDENCE — Con.	22. — HANOVER BRANCH — Con.
MILEAGE, TRAFFIC, ETC.					
Passenger-train mileage,	30,950	136,411	326,639	21,696	15,920
Freight-train mileage,	446	346,309	143,832	5,300	10,006
Total revenue-train mileage,	31,396	482,720	470,471	26,996	25,926
Switching-train mileage,	654	46,368	86,555	—	—
Other train mileage,	200	13,383	50,037	—	—
TOTAL TRAIN MILEAGE,	32,250	542,471	607,063	26,996	15,926
Number season ticket passengers,	9,264	3,553	272,240	—	11,001
Number local passengers (including season),	189,719	69,438	1,315,168	2,838	24,160
Number through passengers*,	23,419	91,935	162,781	143,914	70,790
Total number of passengers carried,	213,138	161,373	1,477,949	146,752	94,950
Local passenger mileage,	1,555,695	1,211,508	11,464,286	8,214	73,110
Through passenger mileage*,	41,685	3,696,718	4,165,374	948,184	213,190
Total passenger mileage,	1,597,380	4,908,226	15,629,660	956,398	286,300
Tons of local freight carried,	—	31,779	183,970	15	3,172
Tons of through freight carried*,	440	491,809	452,150	12,509	17,946
Total tons of freight carried,	440	523,588	636,120	12,524	21,118
Local freight mileage,	—	819,725	2,499,101	64	15,560
Through freight mileage*,	1,188	28,150,944	12,616,863	100,147	58,229
Total freight mileage,	1,188	28,970,669	13,115,967	100,211	73,789
Av. rate of fare per mile, local passengers, through passengers,	2.04 cents.	3.50 cents.	2.73 cents.	2.91 cents.	3.07 cents.
season-ticket passengers,	4.20 "	3.10 "	2.64 "	2.29 "	2.19 "
ALL PASSENGERS,	1.74 "	1.69 "	0.71 "	—	1.10 "
Av. rate of freight per mile, local freight, through freight,	2.66 "	3.14 "	2.37 "	2.30 "	2.10 "
ALL FREIGHT,	—	5.00 "	5.44 "	4.70 "	4.09 "
	18.00 "	1.23 "	2.58 "	5.50 "	4.01 "
	18.00 "	1.28 "	3.05 "	5.50 "	4.06 "

EQUIPMENT.

Number of locomotives,	3	31	42	-†	3
passenger cars,	10	26	32	-	4
parlor and sleeping cars,	-	-	-	-	2
mail, baggage, and express cars,	-	11	18†	-	18
freight cars (basis 8 wheels),	-	453	486	-	
other cars,	5	32	47	-	
GENERAL INFORMATION, ETC.					
Total miles of road operated,	8.65	64,010	79,850	5,794	8,000
Same in Massachusetts,	8.65	21,200	55,930	3,662	8,000
Average number of persons employed,	25	319	686	20	26

* To and from other roads.

† Leases equipment of Old Colony Railroad Company.

‡ Includes fifteen combination cars.

	23. — HOUSATONIC OF CONNECTICUT.*	24. — MILFORD & WOONSOCKET.	25. — NANTASKET BEACH.	26. — NEW HAVEN & NORTHAMPTON.	27. — NEW LONDON NORTHERN.†
CAPITAL STOCK.					
Amount paid in,	-	\$148,600 00	-	\$2,460,000 00	\$1,500,000 00
Number of stockholders,	-	29	-	260	344
Stockholders in Massachusetts, . .	-	27	-	38	45
Amount of stock held in Massachusetts, .	-	\$140,800 00	-	\$150,000 00	\$273,000 00
DEBT.					
Funded debt,	-	\$19,000 00	-	\$3,200,000 00	\$1,499,500 00
Unfunded debt,	-	34,302 16	-	839,486 18	177,253 73
TOTAL GROSS DEBT,	-	53,302 16	-	4,039,486 18	1,676,753 73
PERMANENT INVESTMENTS.					
Construction,	-	\$169,390 35	-	\$5,647,008 53	\$2,771,601 63
Equipment,	-	26,183 18	-	910,957 03	248,420 44
Other property,	-	-	-	100,372 81	243,170 00
TOTAL PERMANENT INVESTMENTS,	-	195,573 53	-	6,658,338 37	3,263,192 07
Cash and cash assets,	-	12,080 55	-	223,719 17	258,911 04
TOTAL PROPERTY AND ASSETS,	-	207,654 08	-	6,882,057 54	3,522,103 11
REVENUE FOR THE YEAR.					
From local passengers,	\$45,402 18	\$11,626 08	\$13,827 99†	\$152,363 38	\$117,311 01\$
through passengers,	39,783 00	10,902 63	-	62,073 80	85,203 87
express and extra baggage,	5,550 00	1,540 13	-	15,674 52	9,848 38
mails,	4,480 09	901 68	-	9,322 58	7,345 15
other sources passenger department, .	-	-	6,250 00	-	-
Total earnings passenger department, . .	95,215 27	24,970 52	20,077 99	239,434 28	219,768 41

From local freight, through freight, other sources freight department, <i>Total earnings freight department,</i>	58,979 48 80,871 47 14,565 56 154,416 51	13,728 96 9,285 90 — 23,014 86	263 65 — — 263 65	337,377 46 236,464 37 19,681 01 593,522 84	133,197 73 215,428 91 — 348,626 64
TOTAL TRANSPORTATION EARNINGS,	249,631 78	47,985 38	20,341 64	832,957 12	568,395 05
From rents for use of road, all other sources,	— 769 32	— —	— —	— 7,256 44	— 9,827 31
TOTAL INCOME FROM ALL SOURCES,	250,401 10	47,985 38	21,026 99	840,213 56	578,222 36
EXPENSES.					
Transportation expenses,	\$172,808 94	\$34,972 52	\$23,660 92	\$541,612 98	\$318,974 29
Taxes,	15,234 46	1,255 57	89 23	24,960 49	25,518 59
TOTAL EXPENSES,	188,043 40	56,228 09	23,720 15	566,573 47	344,492 88
NET INCOME, DIVIDENDS, ETC.					
Net income,	\$32,357 70	\$8,242 71d	\$2,693 16d	\$273,640 09	\$240,063 92||
Rents,	74,095 27	—	—	29,315 44	—
Interest accrued,	—	2,485 79	—	242,196 41	95,418 04
Dividends earned,	—	10,728 50d	—	2,128 24	144,645 88
Per cent.,	—	—	—	—	—
Dividends declared,	—	—	—	—	90,000 00
Per cent.,	—	—	—	—	6.0
Balance for the year,	—	10,728 50d	—	2,128 24	54,645 88
Surplus last year,	—	16,480 42	—	380,443 12	290,703 50
Surplus Sept. 30, 1884,	—	5,751 92	—	382,571 36	345,349 38

* Operating the Berkshire, Stockbridge & Pittsfield, and West Stockbridge Railroads.

† The details of the operation of the road are taken from the return made by the trustee for the bondholders.

‡ Company's account; amount derived from rent, etc., \$247,593.23; less general expenses, \$7,529.31.

† Leased to J. Gregory Smith *et al.*

\$ Lessee's account.

d Deficit.

	23. — HOUSATONIC OF CONNECTICUT — Con.	24. — MILFORD AND WOONSOCKET — Con.	25. — NANTASKET BEACH — Con.	26. — NEW HAVEN & NORTHAMPTON — Con.	27. — NEW LONDON NORTHERN — Con.
MILEAGE, TRAFFIC, ETC.					
Passenger-train mileage,	92,179	46,179	20,748	394,118	240,753
Freight-train mileage,	104,864	17,457	—	211,222	170,273
Total revenue-train mileage,	197,043	63,636	20,748	605,340	411,026
Switching-train mileage,	—	7,823	—	57,200	112,714
Other train mileage,	9,413	—	—	14,646	1,384
TOTAL TRAIN MILEAGE,	206,456	71,459	20,748	677,186	525,124
Number season-ticket passengers,	—	12,528	3,845	—	23,921
Number local passengers (including season),	91,188	73,273	121,380	406,204	269,820
Number through passengers, *	44,631	44,758	—	88,082	142,253
Total number of passengers carried,	135,819	118,031	121,380	494,286	412,073
Local passenger mileage,	1,706,462	443,984	841,528	6,163,854	3,702,385
Through passenger mileage, *	1,721,795	362,190	—	2,609,442	2,875,301
Total passenger mileage,	3,428,257	806,174	841,528	8,773,296	6,577,686
Tons of local freight carried,	41,324	118,637	—	322,993	112,720
Tons of through freight carried, *	66,296	27,619	—	168,224	392,128
Total tons of freight carried,	107,620	146,256	—	491,217	504,848
Local freight mileage,	1,631,777	171,637	—	15,335,330	3,432,531
Through freight mileage, *	3,872,135	275,255	—	11,960,658	16,729,194
Total freight mileage,	5,503,912	446,892	—	27,295,988	20,161,725
Total freight mileage,	2,66 cents.	3.01 cents.	1 67 cents.	2.47 cents.	3.30 cents.
Av. rate of fare per mile, local passengers,	2.32 "	3.23 "	—	2.37 "	3.00 "
through passengers, *	—	0.38 "	0 80 cents.	—	0.72 "
season-ticket passengers,	2.48 cents.	2.79 "	1 60 "	2 44 "	3.09 "
ALL PASSENGERS,	13.00 "	7.99 "	—	2.20 "	3.50 "
Av. rate of freight per mile, local freight,	2 09 "	3.37 "	—	1.97 "	1.28 "
through freight, *	2.45 "	5.15 "	—	2.10 "	1.73 "
ALL FREIGHT,					

EQUIPMENT.

Number of locomotives, . . .	—	3	5	28	22
passenger cars, . . .	—	4	12	20	15
parlor and sleeping cars, . . .	—	—	—	2	—
mail, baggage, and express cars, . . .	—	—	4	15	10
freight cars (basis 8 wheels), . . .	—	—	4	440	310
other cars, . . .	—	1	5	99	13
GENERAL INFORMATION, ETC.					
Total miles of road operated, . . .	46,750	19,997	6,933	173,010	121,000
Same in Massachusetts, . . .	46,750	19,997	6,933	106,620	54,000
Average number of persons employed, . . .	192	45	30	542	450

* To and from other roads.

	28. — NEW YORK, NEW HAVEN & HARTFORD.	29. — NORWICH & WORCESTER.	30. — PROVIDENCE & WORCESTER.	31. — WORCESTER, NASHUA, & ROCHESTER.
CAPITAL STOCK.				
Amount paid in,	\$15,500,000 00	\$2,604,400 00	\$2,500,000 00	\$3,099,800 00
Number of stockholders,	3,548	747	815	1,290
Stockholders in Massachusetts,	495	584	408	825
Amount of stock held in Massachusetts,	\$2,357,400 00	\$1,849,600 00	\$1,404,800 00	\$2,423,800 00
DEBT.				
Funded debt,	\$2,000,000 00	\$400,000 00	\$1,242,000 00	\$1,662,000 00
Unfunded debt,	581,822 05	93,301 18	597,789 42	159,202 00
TOTAL GROSS DEBT,	2,581,822 05	493,301 18	1,839,789 42	1,821,202 00
PERMANENT INVESTMENTS.				
Construction,	\$13,056,686 24	\$3,275,492 14	\$3,508,627 81	\$4,138,584 99
Equipment,	2,479,326 35	179,750 67	941,636 26	415,336 03
Other property,	1,166,783 93	273,107 08	—	—
TOTAL PERMANENT INVESTMENTS,	16,702,796 52	3,728,349 89	4,450,264 07	4,553,921 02
Cash and cash assets,	3,838,332 31	199,147 05	327,519 84	457,452 35
TOTAL PROPERTY AND ASSETS,	20,541,128 83	3,927,496 94	4,777,783 91	5,011,373 37
REVENUE FOR THE YEAR.				
From local passengers,	\$2,378,853 70	\$115,202 31	\$379,881 15	\$96,284 43
through passengers,	1,412,417 77	78,808 55	60,085 78	104,718 84
express and extra baggage,	271,259 13	16,516 56	18,935 08	10,432 04
mails,	150,915 45	5,348 96	2,972 14	11,314 72
other sources passenger department,	127,137 25	—	—	3,334 38
Total earnings passenger department,	4,340,583 30	215,876 38	461,874 15	226,084 41

From local freight,	844,184 31	179,863 66	453,895 90	88,225 87
through freight,	1,574,637 02	326,748 59	213,711 39	310,385 05
other sources freight department,	22,098 03	—	—	6,254 37
<i>Total earnings freight department,</i>	<i>2,440,919 36</i>	<i>506,612 25</i>	<i>667,607 29</i>	<i>404,865 29</i>
TOTAL TRANSPORTATION EARNINGS,	6,781,502 66	722,488 63	1,129,481 44	630,949 70
From rents for use of road,	—	—	—	—
all other sources,	105,755 99	39,412 18	7,151 70	8,497 43
TOTAL INCOME FROM ALL SOURCES,	6,887,258 65	761,900 81	1,136,633 14	639,447 13
EXPENSES.				
Transportation expenses,	\$4,502,730 79	\$418,687 42	\$819,029 93	\$444,320 25
Taxes,	325,514 96	45,699 58	42,770 91	13,705 59
TOTAL EXPENSES,	4,828,245 75	464,387 00	861,800 84	458,025 84
NET INCOME, DIVIDENDS, ETC.				
Net income,	\$2,059,012 90	\$297,513 81	\$274,832 30	\$181,421 29
Rents,	419,790 00	38,175 00	8,100 00	—
Interest accrued,	80,051 58	24,678 59	96,368 43	89,786 61
Dividends earned,	1,559,171 32	234,660 22	170,363 87	91,634 68
Per cent.,	10.1	8.1	6.8	2.6
Dividends declared,	1,550,000 00	259,780 00	150,000 00	65,809 50
Per cent.,	10.0	10.0	6.0	2.51
Balance for the year,	9,171 32	25,119 78 <i>d</i>	20,363 87	25,825 18
Surplus last year,	2,450,135 46	854,915 54	417,630 62	644,346 19
Surplus Sept. 30, 1884,	2,459,306 78	829,795 76	437,994 49	90,371 37

d Deficit.

	28. — NEW YORK, NEW HAVEN & HARTFORD — Con.	29. — NORWICH & WORCESTER — Con.	30. — PROVIDENCE & WORCESTER — Con.	31. — WORCESTER, NASHUA & ROCHESTER — Con.
MILEAGE, TRAFFIC, ETC.				
Passenger-train mileage,	2,365,746	169,256	290,109	215,180
Freight-train mileage,	1,461,939	172,021	252,995	241,090
Total revenue-train mileage,	3,827,685	341,277	543,104	456,270
Switching-train mileage,	617,664	156,196	197,748	58,128
Other train mileage,	207,510	7,892	23,375	13,555
TOTAL TRAIN MILEAGE,	4,652,859	505,365	764,227	527,953
Number season-ticket passengers,	2,311,036	46,800	114,192	76,139
Number local passengers (including season),	6,715,415	351,060	2,416,606	283,146
Number through passengers,*	866,798	102,951	171,190	150,284
Total number of passengers carried,	7,582,213	454,011	2,587,796	433,430
Local passenger mileage,	142,295,916	4,878,575	18,262,207	3,372,168
Through passenger mileage,*	64,381,859	3,016,313	2,494,851	3,963,809
Total passenger mileage,	203,677,775	7,894,888	20,757,058	7,335,977
Tons of local freight carried,	663,075	213,113	451,169	104,172
Tons of through freight carried,*	1,518,175	396,751	311,074	433,796
Total tons of freight carried,	2,181,250	609,864	762,243	537,968
Local freight mileage,	22,938,547	12,142,923	12,249,717	3,109,612
Through freight mileage,*	102,805,256	12,964,602	9,347,269	14,228,634
Total freight mileage,	125,743,803	25,107,525	21,596,986	17,338,246
Av. rate of fare per mile, local passengers,	2.56 cents.	2.50 cents.	2.20 cents.	3.81 cents.
through passengers,*	2.33 "	2.60 "	2.41 "	2.64 "
season-ticket passengers,	0.58 "	0.90 "	0.69 "	0.85 "
ALL PASSENGERS,	1.96 "	2.40 "	2.12 "	2.74 "
Av. rate of freight per mile, local freight,	3.72 "	1.48 "	3.70 "	2.83 "
through freight,*	1.57 "	2.52 "	2.28 "	2.22 "
ALL FREIGHT,	1.96 "	2.02 "	3.09 "	2.33 "

EQUIPMENT.

Number of locomotives,	128	18	37	20
passenger cars,	263	11	40	19
parlor and sleeping cars,	37	-	-	3
mail, baggage, and express cars,	87	7†	13	9
freight cars (basis 8 wheels),	2,208	546	1,203	417
other cars,	50	6	6	-
•				
Total miles of road operated,	265.37	66.48	50.41	94.48
Same in Massachusetts,	5.87	18.50	26.01	39.46
Average number of persons employed,	4,021	456	811	420

GENERAL INFORMATION, ETC.

* To and from other roads.

† Includes four combination cars.

NARROW GAUGE ROADS.	32. — BOSTON, REVERE BEACH & LYNN.	33. — GRAFTON CENTRE	34. — MARTHA'S VINEYARD	35. — NANTUCKET.	36. — WORCESTER & SHREWSBURY.
CAPITAL STOCK.					
Amount paid in,	\$585,800 00	\$29,830 00	\$40,000 00	\$95,000 00	\$36,825 00
Number of stockholders,	342	56	23	75	10
Stockholders in Massachusetts,	322	56	20	66	10
Amount of stock held in Massachusetts,	\$537,500 00	\$29,830 00	\$36,100 00	\$83,100 00	\$36,825 00
DEBT.					
Funded debt,	\$350,000 00	\$13,000 00	\$36,000 00	\$55,000 00	\$15,000 00
Unfunded debt,	10,908 87	6,056 52	5,692 00	5,383 06	3,343 15
TOTAL GROSS DEBT,	360,908 87	19,056 52	41,692 00	60,383 06	18,343 15
PERMANENT INVESTMENTS.					
Construction,	\$611,016 29	\$39,245 98	\$91,462 47	\$147,270 06	39,273 38
Equipment,	158,759 52	5,025 69	14,031 00	14,413 18	20,774 27
Other property,	189,251 22	-	3,501 63	-	-
TOTAL PERMANENT INVESTMENTS,	959,027 03	44,271 67	108,995 10	161,683 24	60,047 65
Cash and cash assets,	15,983 46	427 88	1,732 20	1,100 75	4,824 22
TOTAL PROPERTY AND ASSETS,	975,010 49	44,699 55	110,727 30	162,783 99	64,871 87
REVENUE FOR THE YEAR.					
From local passengers,	\$171,174 27	\$2,425 36	\$5,491 39	\$8,566 26	\$16,051 38
through passengers,	2,198 40	-	-	-	-
express and extra baggage,	-	346 86	17 00	-	-
mails,	-	251 00	-	84 13	-
all other sources,	16,881 82	741 71	113 27	415 22	136 03
TOTAL INCOME FROM ALL SOURCES,	190,254 49	3,764 93	5,621 66	9,065 61	16,187 41

EXPENSES.

Transportation expenses,	\$120,602 45	\$4,340 53	\$3,831 94	\$2,814 27	\$12,734 18
Taxes,	8,256 55	—	28 99	104 43	148 88
TOTAL EXPENSES,	128,859 00	4,340 53	3,860 93	2,918 70	12,883 06
NET INCOME, DIVIDENDS, ETC					
Net income,	\$61,395 49	\$575 60 <i>d</i>	\$1,760 73	\$6,146 91	\$3,304 35
Interest accrued,	21,628 76	910 00	2,160 00	3,080 00	1,050 00
Dividends declared,	35,148 00	—	—	—	—
Per cent.,	6.0	—	—	—	—
Balance for the year,	4,618 73	1,485 60 <i>d</i>	399 27 <i>d</i>	3,066 91	2,254 35
Surplus last year,	23,682 89	2,911 37	29,434 57	4,334 02	7,449 37
Surplus Sept. 30, 1884,	28,301 62	4,396 97	29,035 30	7,400 93	9,703 72

d D. fict.

NARROW GAUGE ROADS.	32. — BOSTON, REVERE BEACH & LYNN — Con.	33. — GRAFTON CENTRE — Con.	34. — MARTHA'S VINEYARD — Con.	35. — NANTUCKET — Con.	36. — WORCESTER & SHREWSBURY — Con.
MILEAGE, TRAFFIC, ETC. Passenger-train mileage, Other train mileage, TOTAL TRAIN MILEAGE, Number season-ticket passengers, Number local passengers (including season), Number through passengers,* <i>Total number of passengers carried,</i> Local passenger mileage, Through passenger mileage,* <i>Total passenger mileage,</i>	138,380 848 139,228 191,722 1,605,039 23,421 1,628,460 8,725,348 72,605 8,797,953	14,085 — 14,085 — 26,520 — 26,520 79,560 — 79,560	5,200 — 5,200 — 24,404 — 24,404 203,285 — 203,285	10,271 — 10,271 — 31,108 — 31,108 342,188 — 342,188	33,343 — 33,343 12,636 227,104 — 227,104 613,180 — 613,180
EQUIPMENT. Number of locomotives, passenger cars, mail, baggage, and express cars, freight cars (basis 8 wheels), other cars,	6 28 — 4 14	— 1† — 1 —	1 3 1 — —	1 3 — — 5	3 6 — — 4
GENERAL INFORMATION, ETC. Total miles of road operated, Same in Massachusetts, Average number of persons employed,	880 880 75	300 300 7	878 878 10	11.00 11.00 15	2.70 2.70 7

* To and from other roads.

† Dummy engine and car.

LEASED ROADS.*		37.—ATTLEBOROUGH BRANCH 1	38.—BERKSHIRE 2	39.—FALL RIVER, 3	40.—HOLYOKE & WESTFIELD, 4	41.—LOWELL & ANDOVER 5
LIABILITIES.						
Capital stock,	.	\$131,700 00	\$600,000 00	\$200,000 00	\$260,000 00	\$500,000 00
Funded debt,	.	—	—	200,000 00	260,000 00	180,000 00
Unfunded debt,	.	—	245 07	66,187 85	553 70	—
Surplus Sept. 30, 1884,	.	635 96	14,221 22	22,240 16 ^d	13,701 62	96,401 45
TOTAL LIABILITIES,	.	132,335 96	614,466 29	466,187 85	534,255 32	776,401 45
ASSETS.						
Construction,	.	\$131,200 98	\$600,000 00	\$443,944 69	\$522,268 89	\$755,306 20
Other property,	.	1,000 00	6,000 00	—	—	—
Cash and cash assets,	.	134 98	8,466 29	—	11,986 43	21,095 25
TOTAL ASSETS,	.	132,335 96	614,466 29	443,944 69	534,255 32	776,401 45
INCOME, EXPENSES, ETC., FOR THE YEAR.						
Total income from all sources,	.	\$9,259 00	\$12,442 92	\$10,166 51	\$29,315 43	\$53,090 37
Total expenses,	.	—	10,315 60	263 00	1,201 75	147 26
Net income,	.	9,259 00	32,127 32	9,903 51	28,113 68	52,943 11
Interest accrued,	.	—	—	10,000 00	17,600 00	10,800 00
Dividends declared,	.	9,219 00	32,113 20	—	10,400 00	35,000 00
Per cent.,	.	7.0	5.35	—	4.0	7.0
Balance for the year,	.	40 00	14 12	96 49 ^d	113 68	7,143 11

* Leased to and operated by the ¹ Boston & Providence, ² Housatonic of Connecticut, ³ Old Colony, ⁴ New Haven & Northampton, ⁵ Boston & Maine. ^d Deficit.

LEASED ROADS.*		42.—LOWELL & FRAMINGHAM.1	43.—MILFORD, FRANKLIN & PROVIDENCE †	44.—MONMOUTH.2	45.—NASHUA & LOWELL.3
LIABILITIES.					
Capital stock,	.	\$744,600 00	\$100,000 00	\$205,400 00	\$800,000 00
Funded debt,	.	500,000 00	—	57,500 00	300,000 00
Unfunded debt,	.	245 11	58 54	14,025 17	46,858 75
Surplus Sept 30, 1881,	.	45 11 ^d	—	96,818 71	118,065 73
TOTAL LIABILITIES,	.	1,244,845 11	100,058 54	373,743 88	1,264,924 48
ASSETS.					
Construction,	.	\$1,145,232 00	\$94,362 45	\$366,829 47	\$691,292 07
Other property,	.	99,568 00	2,213 85	3,090 00	218,242 95
Cash and cash assets,	.	—	3,482 24	3,824 41	355,389 46
TOTAL ASSETS,	.	1,244,800 00	100,058 54	373,743 88	1,264,924 48
INCOME, EXPENSES, ETC., FOR THE YEAR.					
Total income from all sources,	.	†	†	\$12,700 00	\$82,612 92
Total expenses,	.	—	—	88 28	2,229 23
Net income,	.	—	—	12,611 72	80,383 69
Interest accrued,	.	—	—	4,843 97	18,089 07
Dividends declared,	.	—	—	4,000 00	56,000 00
Per cent.,	.	—	—	2.08	7.0
Balance for the year,	.	—	—	3,767 75	6,294 62

* Leased to and operated by the 1 Old Colony, 2 Cheshire, 3 Boston & Lowell. † Disbursements made by the Old Colony R. R. Co. under an agreement for a consolidation. ‡ Operated by the Milford & Woonsocket R. R. Co. upon terms not yet agreed upon. § On \$200,000 capital stock. ^d Deficit.

LEASED ROADS.*	46.—NASHUA, ACTON & BOSTON. ¹	47.—NEWBURYPORT CITY. ²	48.—NORTH BROOKFIELD. ³	49.—PITTSFIELD, & NORTH ADAMS. ⁴	50.—RHODE ISLAND & MASSACHUSETTS. ⁵
LIABILITIES.					
Capital stock,	\$500,000 00	\$97,000 00	\$100,000 00	\$450,000 00	\$100,000 00
Funded debt,	500,000 00	25,000 00	—	—	—
Unfunded debt,	411,592 55	—	—	—	19 00
Surplus Sept. 30, 1884,	351,811 35 <i>d</i>	15,109 27	5,611 47	—	17,225 43
TOTAL LIABILITIES,	1,411,592 55	137,109 27	105,611 47	450,000 00	117,244 43
ASSETS.					
Construction,	\$1,057,031 20	\$122,128 33	\$105,456 79	\$488,752 57	\$112,321 13
Other property,	—	—	75 00	11,247 43	—
Cash and cash assets,	2,750 00	14,980 94	79 68	—	4,923 30
TOTAL ASSETS,	1,059,781 20	137,109 27	105,611 47	450,000 00	117,244 43
INCOME, EXPENSES, ETC., FOR THE YEAR.					
Total income from all sources,	\$11,000 00	\$6,690 00	\$2,598 45	\$22,500 00	\$10,000 00
Total expenses,	—	1,031 53	123 02	—	—
Net income,	11,000 00	5,658 47	2,475 43	22,500 00	10,000 00
Interest accrued,	31,486 79	1,750 00	—	—	—
Dividends declared,	—	2,910 00	2,500 00	22,500 00	10,000 00 [†]
Per cent.,	—	3.0	2.5	5.0	10.0
Balance for the year,	20,486 79 <i>d</i>	998 47	24 57 <i>d</i>	—	—

* Leased to ¹Concord of N. H. and operated by the Boston & Lowell, ²Eastern, ³4 Boston & Albany, ⁵New York & New England.

† Also paid a dividend of eight per cent from the surplus of the year 1883.

d Deficit.

LEASED ROADS.*		51.—PROVIDENCE, WEBSTER & SPRING- FIELD, †	52.—SPENCER	53.—SPRINGFIELD & NEW LONDON.2	54.—STOCKBRIDGE & PITTSFIELD.3	55.—STONY BROOK.4
LIABILITIES.						
Capital stock,	.	\$110,000 00	\$50,000 00	\$198,145 00	\$148,700 00	\$300,000 00
Funded debt,,	.	—	4,500 00	—	—	—
Unfunded debt,	.	46,041 23	—	113 00	648 93	—
Surplus Sept. 30, 1884,	.	—	11,574 89	2,027 43	2,797 01	1,367 81
TOTAL LIABILITIES,	.	156,041 23	66,074 89	200,285 43	452,145 97	301,367 81
ASSETS.						
Construction,,	.	\$156,041 23	\$65,892 21	\$187,805 52	\$148,700 00	\$276,601 19
Other property,	.	—	—	9,998 00	2,550 00	23,492 38
Cash and cash assets,	.	—	182 68	2,481 91	895 97	1,274 21
TOTAL ASSETS,	.	156,041 23	66,074 89	200,285 43	452,145 97	301,367 81
INCOME, EXPENSES, ETC., FOR THE YEAR.						
Total income from all sources,	.	—†	\$2,945 71	\$5,517 00	\$31,647 00	\$18,510 00
Total expenses,	.	—	466 82	843 57	7,595 98	196 48
Net income,	.	—	2,478 89	4,673 43	24,051 02	18,313 52
Interest accrued,	.	—	404 76	—	65 10	—
Dividends declared,	.	—	—	4,302 50	23,950 22	18,000 00
Per cent.,	.	—	—	2.5	5.34	6.0
Balance for the year,	.	—	2,074 13	370 93	35 70	313 52

* These roads are leased to and operated by the ¹ Boston & Albany, ² New York & New England, ³ Housatonic of Connecticut, ⁴ Boston & Lowell.

† Operated by the Boston & Albany under a contract.

LEASED ROADS.*		56.—UNION FREIGHT.†	57.—VERMONT & MASSACHUSETTS.2	58.—WARE RIVER.3	59.—WEST AMES- BURY BRANCH.4	60.—WEST STOCK- BRIDGE.5
LIABILITIES.						
Capital stock,	.	\$300,000 00	\$3,050,000 00	\$750,000 00	\$57,000 00	\$39,600 00
Funded debt,	.	—	1,150,400 00	—	57,000 00	—
Unfunded debt,	.	4,724 09	10,011 05	365,163 82	67 00	—
Surplus Sept. 30, 1884,	.	31,329 53	142,002 28	—	163 39	1,113 19
TOTAL LIABILITIES,	.	336,053 62	4,352,413 33	1,115,163 82	114,230 39	40,713 19
ASSETS.						
Construction,	.	\$264,515 52	\$3,288,338 01	\$1,115,163 82	\$114,000 00	\$39,600 00
Other property,	.	30,000 00	472,507 65	—	—	400 00
Cash and cash assets,	.	41,538 10	591,577 67	—	230 39	713 19
TOTAL ASSETS,	.	336,053 62	4,352,413 33	1,115,163 82	114,230 39	40,713 19
INCOME, EXPENSES, ETC., FOR THE YEAR.						
Total income from all sources,	.	\$72,475 38†	\$186,000 00	\$52,500 00	\$5,700 00	\$1,894 31
Total expenses,	.	50,079 20	3,000 00	—	201 27	338 00
Net income,	.	22,396 18	183,000 00	52,500 00	5,498 73	1,556 31
Interest accrued,	.	—	+	—	3,990 00	—
Dividends declared,	.	21,000 00	183,000 00	52,500 00	1,567 50	1,584 00
Per cent.,	.	7.0	6.0	7.0	2.75	4.0
Balance for the year,	.	1,396 18	—	—	58 77d	27 69d

* These roads are leased to and operated by ¹Old Colony, ²Fitchburg, ³Boston & Albany, ⁴Boston & Maine, ⁵Housatonic of Connecticut.

† Company's account.

‡ Interest paid by Fitchburg Railroad Company.

d Deficit.

	61.—TROY & GREENFIELD.*	62.—CENTRAL MASSACHUSETTS.†	63.—CHELSEA BRANCH.‡	64.—DANVERS.‡	65.—DORCHESTER & MILTON.‡	66.—HORN POND BRANCH.
LIABILITIES.						
Capital stock,	—	\$7,245,988 00	\$21,000 00	\$67,500 00	\$73,340 00	\$2,000 00
Funded debt,	—	—	—	150,000 00	—	—
Unfunded debt,	—	—	17,110 52	20,956 02	58,448 07	—
Surplus Sept. 30, 1884,	—	—	—	—	4,584 70	13,238 46
TOTAL LIABILITIES,	—	7,245,988 00	38,110 52	244,456 02	136,372 77	15,238 46
ASSETS.						
Construction,	—	—†	\$38,110 52	\$244,456 02	\$136,372 77	\$15,238 46
Other property,	—	—	—	—	—	—
Cash and cash assets,	—	—	—	—	—	—
TOTAL ASSETS,	—	—	38,110 52	244,456 02	136,372 77	15,238 46
INCOME, EXPENSES, ETC., FOR THE YEAR						
Total income from all sources,	\$316,375 38	—	—	—	—	—
Total expenses,	219,026 12	—	—	—	—	—
Net income,	97,349 26	—	—	—	—	—

* This road is operated by connecting railroad*, under contract with the State.

† Road in the hands of the committee of the bondholders. Not in operation the past year.

‡ These roads are virtually owned by the 1 Eastern, 2 Boston & Maine, 3 Old Colony; and their earnings and expenses are included in the returns of those roads.

4 Operated by the Boston & Lowell.

	67.—LANCASTER.*	68.—NEWBURYPORT †	69.—NEW YORK & BOSTON INLAND. ‡	70.—OCEAN TERMINAL. ‡
LIABILITIES.				
Capital stock,	-	\$220,340 02	-	\$2,000 00
Funded debt,	-	300,000 00	-	-
Unfunded debt,	-	77,046 31	-	-
Surplus Sept. 30, 1884,	-	-	-	-
TOTAL LIABILITIES,	-	597,386 33	-	2,000 00
ASSETS.				
Construction,	-	\$597,386 33	-	\$1,669 28
Other property,	-	-	-	-
Cash and cash assets,	-	-	-	330 72
TOTAL ASSETS,	-	597,386 33	-	2,000 00

* Road sold under foreclosure of a mortgage.

† This road is virtually owned by the Boston & Maine, and its earnings and expenses are included in the return of that road.

‡ Obtained a certificate of Incorporation but has not yet commenced the construction of its road.

TABULATED COMPARATIVE RESULTS
OF THE
CONDITION AND OPERATION
OF SEVERAL OF THE
RAILROAD CORPORATIONS OF THE STATE.

COMPILED FROM REPORTS.

TABULATED COMPARATIVE RESULTS OF RAILROAD CORPORATIONS.

RAILROADS.	STOCK, DEBT AND COST PER MILE OF ROAD OWNED.					
	71. — Stock paid in.	72. — Net Debt.	73. — Total Stock and Net Debt.	74. — Construction.	75. — Equipment.	76. — Total Permanent Investments.
Boston & Albany,	\$66,328 39	\$30,065 89	\$96,393 78	\$83,635 04	\$10,431 47	\$99,546 90
Boston & Lowell,	43,960 12	48,456 08	92,416 20	76,433 19	7,212 48	97,811 69
Boston & Maine,	55,816 73	24,787 14	80,603 87	76,515 97	10,549 81	93,611 27
Boston & Providence,	62,743 13	11,973 48	74,716 61	73,549 40	3,253 23	81,235 78
Eastern,	42,238 00	118,420 43	160,658 43	123,002 48	13,094 72	162,119 00
Fitchburg,	53,043 29	34,394 75	87,438 04	49,239 54	26,894 62	90,434 87
New York & New England,	61,393 01	52,687 26	114,080 27	91,153 19	11,651 89	112,545 83
Old Colony,	24,476 27	21,053 96	45,530 23	38,750 39	5,076 20	47,708 10
Average,	\$48,785 07	\$39,409 86	\$88,194 93	\$74,096 45	\$10,088 31	\$91,003 14
Cheshire,	\$40,158 52	\$10,146 49	\$50,305 01	\$14,671 18	\$6,010 19	\$50,681 37
Connecticut River,	42,435 09	2,903 73	45,338 82	53,518 60	6,980 62	62,282 74
New Haven & Northampton,	19,316 84	29,962 83	49,279 67	44,342 43	7,153 18	52,283 77
New York, New Haven & Hartford,	110,163 47	—	110,163 47	92,798 05	17,621 37	118,712 13
Norwich & Worcester,	39,175 69	4,424 70	43,600 39	49,270 34	2,703 83	56,082 28
Providence & Worcester,	49,593 33	29,999 40	79,592 73	69,601 82	18,679 55	88,281 37
Worcester, Nashua & Rochester,	32,805 88	14,434 27	47,240 15	43,803 82	4,396 02	48,199 84
Average,	\$52,110 75	\$13,062 15	\$65,172 90	\$60,157 28	\$8,870 59	\$71,812 56
Average 15 Roads,	\$49,704 95	\$32,120 08	\$81,825 03	\$70,239 56	\$9,751 36	\$85,693 27

Tabulated Comparative Results of Railroad Corporations — Continued.

RAILROADS.	EARNINGS AND EXP. PER TOTAL REVENUE-TRAIN MILE.			EARNINGS AND EXPENSES PER MILE ROAD OPERATED.		
	77. — Total Transportation Earnings.	78. — Operating Expenses.	79. — Net Earn- ings.	80. — Total Transportation Earnings.	81. — Operating Expenses.	82. — Net Earn- ings.
Boston & Albany,	\$19,894 87	\$13,692 61	\$6,202 26	\$1,542	\$1,061	\$0 481
Boston & Lowell,	5,053 50	3,566 37	1,487 13	1,451	1,024	.427
Boston & Maine,	14,223 16	9,569 62	4,653 54	1 588	1,008	.520
Boston & Providence,	25,155 88	18,587 26	6,568 62	1,750	1,293	.457
Eastern,	11,875 94	7,844 62	4,031 32	1,580	1,044	.536
Fitchburg,	14,634 56	10,467 47	4,167 09	1,394	.937	.397
New York & New England,	8,445 27	7,442 49	1,002 78	1,360	1,198	.162
Old Colony,	8,743 16	5,861 19	2,881 97	1,686	1,130	.556
Average,	\$11,269 17	\$7,999 26	\$3,269 91	\$1,532	\$1,088	\$0.444
Cheshire,	\$8,883 57	\$6,040 22	\$2,843 35	\$1,177	\$0,800	\$0.377
Connecticut River,	10,780 38	7,116 15	3,664 23	1,832	1,209	.623
New Haven & Northampton,	4,814 50	3,130 53	1,683 97	1,377	.895	.482
New York, New Haven & Hartford,	25,554 90	16,967 75	8,587 15	1,771	1,176	.595
Norwich & Worcester,	10,867 76	6,297 95	4,569 81	2,119	1,228	.891
Providence & Worcester,	22,405 90	16,247 37	6,158 53	2,080	1,508	.572
Worcester, Nashua & Rochester,	6,678 13	4,702 80	1,975 33	1,353	.974	.409
Average,	\$14,542 88	\$9,691 07	\$4,851 81	\$1,714	\$1,142	\$0.572
Average 15 Roads,	\$12,050 49	\$8,402 93	\$3,647 51	\$1,580	\$1,102	\$0.478

Tabulated Comparative Results of Railroad Corporations — Continued.

RAILROADS.	EXPENSES PER TOTAL TRAIN MILE.							
	\$3. — Repairs of Road.*	\$4. — Repairs of Bridges.	\$5. — New Rails.	\$6. — Repairs of Locomotives.	\$7. — Fuel.	\$8. — Oil and Waste.	\$9. — Repairs of Passenger, Baggage and Mail Cars.†	\$10. — Repairs of Freight Cars.‡
Boston & Albany,	\$0.1493	\$0.0222	\$0.0282	\$0.0690	\$0.1161	\$0.0103	\$0.0890	\$0.1351
Boston & Lowell, . . . . .	.1083	.0280	.0187	.0511	.1049	.0109	.0692	.2013
Boston & Maine, . . . . .	.0961	.0160	.0243	.0536	.1077	.0058	.0702	.1034
Boston & Providence, . . . . .	.1620	.0313	.0236	.0801	.1167	.0160	.1344	.1598
Eastern, . . . . .	.0861	.0267	.0175	.0640	.1041	.0062	.0617	.1290
Fitchburg, . . . . .	.0713	.0114	.0155	.0539	.1194	.0054	.0683	.1234
New York & New England, . . . . .	.1145	.0166	.0084	.1096	.1375	.0075	.0808	.1188
Old Colony, . . . . .	.1611	.0160	.0362	.0456	.0890	.0084	.0903	.1168
Average,	\$0.1187	\$0.0204	\$0.0224	\$0.0660	\$0.1121	\$0.0085	\$0.0811	\$0.1326
Cheshire,	\$0.0777	\$0.0037	\$0.0092	\$0.0564	\$0.1825	\$0.0103	\$0.1121	\$0.0585
Connecticut River, . . . . .	.1456	.0043	.0206	.0558	.1466	.0056	.0537	.2676
New Haven & Northampton, . . . . .	.1463	.0132	.0298	.0521	.0949	.0116	.0596	.1827
New York, New Haven & Hartford, . . . . .	.1464	.0496	.0066	.0421	.0968	.0159	.1177	.0706
Norwich & Worcester, . . . . .	.0822	.0036	.0401	.0555	.0964	.0500	.0584	.1990
Providence & Worcester, . . . . .	.0929	.0483	.0067	.0775	.0984	.0062	.0649	.1241
Worcester, Nashua & Rochester, . . . . .	.1344	.0114	.0474	.0741	.1378	.0081	.0537	.0886
Average,	\$0.1321	\$0.0351	\$0.0144	\$0.0461	\$0.1086	\$0.0124	\$0.0962	\$0.1016
Average 15 Roads,	\$0.1223	\$0.0243	\$0.0203	\$0.0607	\$0.1116	\$0.0096	\$0.0852	\$0.1246

* Including cost of new ties.

† Per passenger-train mile.

‡ Per freight-train mile.

Tabulated Comparative Results of Railroad Corporations — Continued.

RAILROADS.	REPAIRS.			AVERAGES, ETC.			
	91. — Per Locomotive.	92. — Per Passenger, Baggage and Mail Car.	93. — Per Freight Car.	94. — Per Passenger; Average Distance travelled.	95. — Per Ton of Freight; Average Distance carried.	96. — Average No. of Passengers per Train Mile.	97. — Average No. of Tons of Freight per Train Mile.
Boston & Albany,	\$1,612 17	\$629 06	\$65 93	19.1	112.6	86	124
Boston & Lowell,	873 16	392 51	40 51	12.3	40.2	45	97
Boston & Maine,	1,268 45	443 27	29 89	12.7	46.9	70	83
Boston & Providence,	1,450 42	495 91	44 98	10.1	29.8	76	89
Eastern,	1,521 06	386 01	45 71	13.7	58.9	77	105
Fitchburg,	1,337 92	462 35	37 19	15.7	77.2	56	162
New York & New England,	2,252 66	510 36	37 77	12.4	77.5	45	122
Old Colony,	1,139 48	534 95	40 60	14.9	36.3	71	72
Average,	\$1,463 72	\$488 01	\$46 15	14.2	70.5	67	116
Cheshire,	\$986 25	\$412 04	\$41 74	30.5	55.3	36	84
Connecticut River,	1,059 56	351 52	71 96	10.6	23.8	48	105
New Haven & Northampton,	1,258 74	634 37	71 52	17.8	55.6	22	129
New York, New Haven & Hartford,	1,528 64	719 76	45 73	27.3	57.7	87	86
Norwich & Worcester,	1,557 23	548 17	62 19	17.4	41.1	47	146
Providence & Worcester,	1,644 58	355 24	25 97	8.0	28.3	72	85
Worcester, Nashua & Rochester,	1,955 24	365 24	51 22	16.9	32.2	34	72
Average,	\$1,302 01	\$609 88	\$47 89	20.6	45.5	70	92
Average 15 Roads,	\$1,427 79	\$520 12	\$46 51	15.5	62.9	68	110

Tabulated Comparative Results of Railroad Corporations — Concluded.

RAILROADS.	98. — Passenger Earnings.	99. — Freight Earnings.	100. — Total Transportation Earnings.	101. — Operating Expenses.	102. — Net Earnings.	103. — Percent Operating Expenses to Trans. Earnings.
Boston & Albany,	\$3,556,687 95	\$4,090,301 98	\$7,646,989 93	\$5,263,026 54	\$2,383,963 39	69
Boston & Lowell,	1,396,925 96	1,382,144 87	2,779,070 83	1,961,251 76	817,819 07	71
Boston & Maine,	1,808,705 81	1,095,663 61	2,904,369 42	1,954,117 17	950,252 25	67
Boston & Providence,	1,089,810 83	614,500 42	1,704,311 25	1,259,287 17	445,024 08	74
Eastern,	1,990,710 34	1,393,339 87	3,384,050 21	2,235,325 24	1,148,724 97	66
Fitchburg,	992,441 36	1,775,547 76	2,767,689 12	1,979,608 78	788,080 34	72
New York & New England,	1,240,427 97	1,955,685 83	3,196,113 80	2,816,609 64	379,504 16	88
Old Colony,	2,352,755 02	1,741,859 92	4,094,594 94	2,744,913 90	1,349,681 04	67
Cheshire,	177,856 98	390,780 17	568,637 15	386,634 68	182,002 47	68
Connecticut River,	399,260 81	461,551 95	860,812 76	568,224 29	292,588 47	66
New Haven & Northampton,	239,434 28	593,522 84	832,957 12	541,612 98	291,344 14	65
New York, New Haven & Hartford,	4,340,583 30	2,440,919 36	6,781,502 66	4,502,730 79	2,278,771 87	66
Norwich & Worcester,	215,876 38	506,612 25	722,488 63	418,687 42	303,801 21	58
Providence & Worcester,	461,874 15	667,607 29	1,129,481 44	819,029 93	310,451 51	73
Worcester, Nashua & Rochester,	226,084 41	401,865 29	630,949 70	444,320 25	186,629 45	70

COMPARISON OF RETURNS

1883 with 1884,

AND

SUMMARY TAKEN FROM RETURNS

OF

1873-1879-1880-1881-1882-1883-1884.

Summary taken from the Returns of 1883 and 1884.

	1883.	1884.	Increase.	Decrease.
<i>Roadway.</i>	Miles.	Miles.	Miles.	Miles.
Length of road and branches, .	2,782.903	2,851.743	68.840	-
in Massachusetts, .	1,953.258	1,973.708	20.450	-
Length of double track, .	825.537	941.627	116.090	-
in Massachusetts, .	587.299	687.859	80.590	-
Length of sidings, .	1,109.129	1,165.207	56.078	-
in Massachusetts, .	799.246	832.393	33.147	-
Total length as single track, .	4,717.569	4,958.577	241.008	-
in Massachusetts, .	3,339.803	3,473.990	134.187	-
Length of steel rails in track, .	2,774.431	3,121.720	347.289	-
Length of iron rails in track, .	1,943.138	1,836.857	-	106.281
Total miles of road operated, .	3,215.906	3,585.127*	369.221*	-
in Massachusetts, .	1,953.258	1,930.108*	-	23.150
Railroad crossings at grade, .	40	40	-	-
over grade, .	19	19	-	-
under grade, .	19	19	-	-
Highway crossings at grade, .	2,143	2,128	-	15
protected, .	651	677	26	-
unprotected, .	1,492	1,451	-	41
<i>Assets.</i>				
Construction,	\$165,824,300 96	\$176,899,373 56	\$11,075,072 60	-
Equipment,	20,122,551 63	22,041,997 09	1,919,445 46	-
Lands,	1,976,330 19	2,194,606 92	218,276 73	-
Stocks,	8,175,153 95	6,977,283 10	-	\$1,197,870 85
Bonds,	1,007,435 68	1,171,517 43	164,081 75	-
Other property,	1,795,504 34	2,597,096 44	801,592 10	-
Total permanent investments, .	\$193,901,276 75	\$211,881,874 54	\$12,980,597 79	-
Cash,	\$3,486,922 68	\$2,364,251 10	-	\$1,122,671 58
Materials and supplies,	3,924,033 70	4,133,113 33	\$209,079 63	-
Sinking fund,	2,201,420 19	2,372,525 46	171,105 27	-
Other cash assets,	8,690,168 47	8,443,520 35	-	246,648 12
Total cash and cash assets, . . .	\$18,302,545 04	\$17,313,410 24	-	\$989,134 80
Profit and loss balance (deficit),	10,074,029 16	1,363,391 24	-	8,710,637 92
Total assets as per balance-sheet,	\$227,277,850 95	\$230,558,676 02	\$3,280,825 07	-
<i>Liabilities.</i>				
Capital stock,	\$122,367,572 27	\$127,668,390 27	\$5,300,818 00	-
Funded debt,	77,886,652 62	77,625,238 50	-	\$261,414 12
Unfunded debt,	13,349,183 35	14,127,045 49	778,462 14	-
Surplus,	13,674,442 71	11,137,401 76	-	2,537,040 95
Total liabilities as per balance-sheet,	\$227,277,850 95	\$230,558,676 02	\$3,280,825 07	-
Total number of stockholders, .	38,275	39,205	930	-
in Massachusetts, .	27,827	28,513	686	-
Stock held in Massachusetts, . .	\$81,477,870 02	\$85,332,908 02	\$3,855,038 00	-
Persons employed,	29,844	30,590	746	-

* Central Mass. Railroad (43.60 miles) not in operation during the year.

Summary taken from the Returns of 1883 and 1884.

	1883.	1884.	Increase.	Decrease.
<i>General Exhibit for the Year.</i>				
Total income,	\$43,380,387 63	\$43,119,302 70	-	\$261,084 93
Total expense, including taxes,	30,733,114 67	30,389,465 54	-	343,649 13
Net income,	12,647,272 96	12,729,837 16	\$82,564 20	-
Rentals,	1,746,793 04	1,681,218 97	-	65,574 07
Interest accrued,	4,756,085 23	4,729,328 56	-	26,756 67
Dividends earned,	6,144,394 69	6,319,289 63	174,894 94	-
per cent,	5 02	4 95	-	0 07
Dividends declared,	6,379,721 10	6,535,054 92	155,333 82	-
per cent,	5 21	5 12	-	-
Balance for the year,	\$235,326 41	\$215,765 29	-	19,561 12
Surplus Sept. 30,	3,600,413 55	6,173,596 97	2,573,183 32	-
<i>Transportation Earnings.</i>				
From local passengers,	\$13,652,320 69	\$14,063,917 78	\$411,597 09	-
through passengers,	5,245,265 19	5,234,755 04	-	\$10,510 15
express and extra baggage,	1,090,945 52	1,163,684 03	72,738 51	-
mails,	590,730 43	600,305 57	9,575 14	-
other sources,	23,027 30	144,538 00	121,510 70	-
Total passenger department,	\$20,602,289 13	\$21,207,200 42	\$604,911 29	-
From local freight,	\$10,861,206 85	\$9,859,079 52	-	\$1,002,127 33
through freight,	10,104,560 63	10,327,777 47	\$223,216 84	-
other sources,	67,743 78	62,919 89	-	4,823 89
Total freight department,	\$21,033,511 26	\$20,249,776 88	-	\$783,734 38
Total transportation earnings,	41,635,800 39	41,456,977 30	-	178,823 09
Transportation expenses, including taxes,	\$31,441,471 45	\$30,927,242 39	-	\$514,229 06
<i>Mileage, Traffic, etc.</i>				
Train miles, passenger,	14,244,658	15,157,425	912,587	-
freight,	11,382,154	11,282,338	-	99,816
Total revenue-train miles,	25,626,812	26,439,763	812,951	-
Miles run by other trains,	5,524,011	5,864,570	340,559	-
Total train miles,	31,150,823	32,304,333	1,153,510	-
Passenger, season ticket,	12,769,420	11,436,929	-	1,332,491
total number,	61,530,747	66,517,265	4,986,518	-
local mileage,	702,461,181	761,629,437	59,168,256	-
through mileage,	240,784,477	245,506,939	4,722,462	-
total mileage,	943,245,658	1,007,136,376	63,890,718	-
Freight, total tons carried,	20,202,881	20,273,920	71,039	-
local mileage,	398,541,430	358,476,644	-	40,064,786
through mileage,	822,282,988	870,891,828	48,608,840	-
total mileage,	1,220,824,418	1,229,368,472	8,544,054	-
<i>Equipment.</i>				
Locomotives,	1,286	1,391	105	-
Passenger cars,	1,790	1,948	158	-
Mail, baggage and express cars,	482	525	43	-
Freight and other cars (basis 8 wheels),	28,008	29,701	1,693	-

d Deficit.

Summary taken from Returns of 1873, 1879, 1880, 1881, 1882, 1883, 1884.

	1873.	1879.	1880.	1881.	1882.	1883.	1884.
Main line in Massachusetts, . . .	1,734,955	1,861,823	1,893,080	1,927,944	1,949,470	1,953,258	1,973,708
Double track in Massachusetts, . .	436,068	450,718	454,792	480,877	539,070	587,299	667,889
Sidings in Massachusetts, . . .	443,987	650,383	696,693	739,285	768,195	799,264	832,393
Total in Massachusetts, . . .	2,615,010	2,962,924	3,044,565	3,148,106	3,256,725	3,533,803	3,473,990
Amount of capital stock, . . .	\$115,406,883 54	\$118,390,938 88	\$118,738,571 58	\$122,155,614 12	\$122,976,262 26	\$122,367,572 27	\$127,668,390 27
Amount of stock held in Mass., . .	63,267,080 00	76,481,584 07	78,806,559 95	80,813,841 82	80,602,561 35	81,477,870 02	85,332,908 02
Number of stockholders, . . .	32,901	37,041	36,874	36,354	37,284	38,275	39,205
Stockholders in Massachusetts, . .	23,845	26,655	27,037	26,485	27,282	27,827	28,513
Gross debt, . . .	\$45,031,862 59	\$65,923,595 33	\$72,841,890 36	\$79,340,124 56	\$89,251,016 03	\$91,235,835 97	\$91,752,883 99
Net debt, . . .	36,606,894 70	55,755,418 06	59,172,520 25	64,850,890 76	71,913,806 00	72,933,290 93	74,439,473 75
Cost of construction, . . .	\$128,181,510 69	\$147,860,583 71	\$152,458,105 46	\$159,664,120 10	\$163,724,377 54	\$155,824,300 96	\$176,899,373 56
Cost of equipment, . . .	17,861,859 47	16,356,112 58	17,263,063 72	18,795,188 80	19,410,331 13	20,122,551 63	22,041,997 09
Cost of other property, . . .	11,566,450 17	8,913,843 28	10,478,249 48	11,404,816 30	15,821,119 87	12,914,424 16	12,940,503 89
Total permanent investment, . . .	157,609,820 33	173,130,539 57	180,199,423 66	189,864,125 20	198,958,828 54	198,901,276 75	211,881,874 54
Cash and cash assets, . . .	8,424,967 89	13,669,370 11	14,489,233 80	17,337,240 03	17,337,240 03	18,302,545 04	17,313,410 24
Total property and assets, . . .	166,034,788 22	185,234,506 25	193,868,793 77	204,353,359 00	216,293,068 57	217,203,821 79	229,195,281 78
Total income from all sources, . . .	\$34,930,527 42	\$30,312,964 54	\$35,140,374 77	\$37,764,395 83	\$40,846,370 10	\$43,380,387 63	\$43,119,302 70
Net expense,* . . .	25,412,688 74	20,158,950 68	23,948,539 24	27,062,644 23	29,944,167 15	32,479,907 71	32,070,684 51
Net income, . . .	9,517,838 68	10,154,013 86	11,191,815 53	10,701,751 60	10,902,202 95	10,900,479 92	11,048,618 19
Interest accrued, . . .	1,846,783 16	3,172,990 59	3,423,752 25	3,748,292 55	4,291,292 59	4,736,085 23	4,729,328 56
Dividends earned, . . .	7,671,053 52	6,981,023 27	7,768,063 28	6,953,459 05	6,610,980 36	6,144,394 69	6,319,289 63
Percentage to capital stock, . . .	6.65	5.85	6.56	5.69	5.37	5.02	4.95
Dividends declared, . . .	7,230,456 02	5,294,431 78	5,987,718 64	6,287,866 82	6,271,139 86	6,379,721 10	6,535,054 92
Per cent., . . .	6.34	4.44	5.05	5.15	5.10	5.21	5.12
Balance for the year, . . .	440,590 50	1,716,491 49	1,780,344 64	665,592 23	339,840 50	235,326 41d	215,765 29d
Total surplus Sept. 30, . . .	11,109,635 89	939,972 04	2,288,031 83	2,857,620 32	4,065,760 28	3,600,413 55	6,173,596 97

Taxes paid,	\$1,286,167 99	\$1,171,684 63	\$1,382,555 19	\$1,568,020 94	\$1,830,437 03	\$1,878,200 01	\$2,024,559 81
Mileage, passenger trains,	9,212,257†	10,792,629	11,350,716	12,413,290	13,636,169	14,244,658	15,157,425
Mileage, freight trains,	9,684,612†	8,974,993	9,809,975	10,398,539	10,598,126	11,382,154	11,282,338
Mileage, other trains,	1,164,748	2,988,288	3,814,701	4,393,954	4,818,565	5,524,011	5,864,570
Total train mileage,	20,061,617	22,755,910	24,975,392	27,205,783	29,052,800	31,150,823	32,304,333
Total passenger mileage,	658,207,465	616,871,131	708,645,422	788,422,761	892,321,207	943,245,658	1,007,136,376
Through passenger mileage,†	194,647,972	170,714,910	199,053,664	219,680,579	242,970,014	240,784,477	1,245,506,939
Total freight mileage,	615,769,300	806,004,933	959,429,750	1,080,802,796	1,180,070,652	1,220,824,418	229,368,472
Through freight mileage,†	355,433,861	551,529,550	649,741,938	760,209,637	777,203,347	822,282,988	870,891,828
Total passengers carried,	42,398,001	39,217,634	45,151,152	49,834,491	55,868,694	61,530,747	66,517,265
Total tons of freight carried,	12,431,188	14,401,877	17,221,567	17,971,072	19,061,164	20,202,881	20,273,920
Total season-ticket passengers,	6,655,443‡	10,200,304	11,623,285	12,616,987	12,674,117	12,769,420	11,436,929
Number persons employed,	20,182	19,453	21,615	25,490	27,403	29,844	30,590
Locomotives,	908	1,070	1,103	1,161	1,222	1,286	1,391
Passenger cars,	1,243	1,451	1,512	1,568	1,658	1,790	1,948
Mail and baggage cars,	305	401	403	432	463	482	525
Freight cars,	16,143	19,509	21,986	24,502	26,382	28,008	29,701
Steel rails,	630,405	1,696,082	1,930,780	2,134,964	2,466,203	2,774,431	3,121,720
Iron rails,	2,937,227	2,453,904	2,276,999	2,304,306	2,109,232	1,943,138	1,836,857

* Including operating expenses, taxes, and rents. † Mileage of switching engines included in these accounts for this year, hereafter included in "Mileage, other trains."

‡ Mileage to and from other roads.

§ In this year computed by a majority of the roads *one* passenger per day, for the other years *two* passengers per day, for time of each ticket.

d Deficit.

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ACME
BOOKBINDING CO., INC.

APR 6 1991

100 CAMBRIDGE STREET
CHARLESTOWN, MASS

